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Primitive Iron Smelting in China

Tubal Cains of Today—How Natives Make Cast Iron and Put Phosphorus Into It Without Knowing It

BY THOMAS T. READ*

TUBAL CAIN, according to Biblical tradition, was the first ancestor of every worker in brass and iron. It seems a far cry from that legendary gentleman and his methods to the modern iron blast furnace, with an output of 500 tons of pig iron per day, and the open-hearth furnace with its correspondingly great yield of steel, but a more surprising thing is that, in the far corners of the earth, methods essentially the same as those primitive beginnings are still being practiced.

One of the most famous centers of iron smelting by primitive methods is the Ping-ting-chou region of Shansi province, China. How long ago the art of iron smelting was developed there we have no certain knowledge, for iron yields so readily to corrosion and cast iron is so difficult to engrave and lends itself so readily to being broken up and remelted that it does not yield the ancient records that make bronzes so valuable to the student of history. The cast iron cooking kettles and other objects collected from this region by Berthold Laufer are quite certainly ascribed to the Han dynasty, but whether the industry in Shansi had its beginning in this dynasty, which was so active in bringing to China the arts and products of distant lands, we do not know.

Since iron is mentioned in Chinese records nearly 20 centuries before the Christian era, it is not at all improbable that the art was practiced much earlier than 200 B. C., and at any rate we have before us the picture of the metallurgists' art practiced in essentially the same way for over 20 centuries. It seems probable that the method used was devised in this region, because it differs markedly from the

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The Hoisting Engine Used to Raise the Ore Wears a Cheerful Expression. The small shafts are shallow and the workings very narrow. The small brick structure at the right is the shrine of the local deity

usual method of iron smelting followed by primitive peoples. Usually a small rude furnace is constructed by digging a shallow hole in the earth, such as the Japanese used to use for copper smelting, and through improvements the artisans gradually arrive at such furnaces as can be found in Szu-chuan and the Philippines today. Those about to be described are quite unusual and therefore it is probable that they originated at the place where they are now found.

It was my privilege, a few years ago, to traverse this region on foot, thus affording ample opportunity to make observations and secure photographs. F. A. Foster has kindly given permission for the use of some of his own photographs, secured subsequently, that supplement my own.

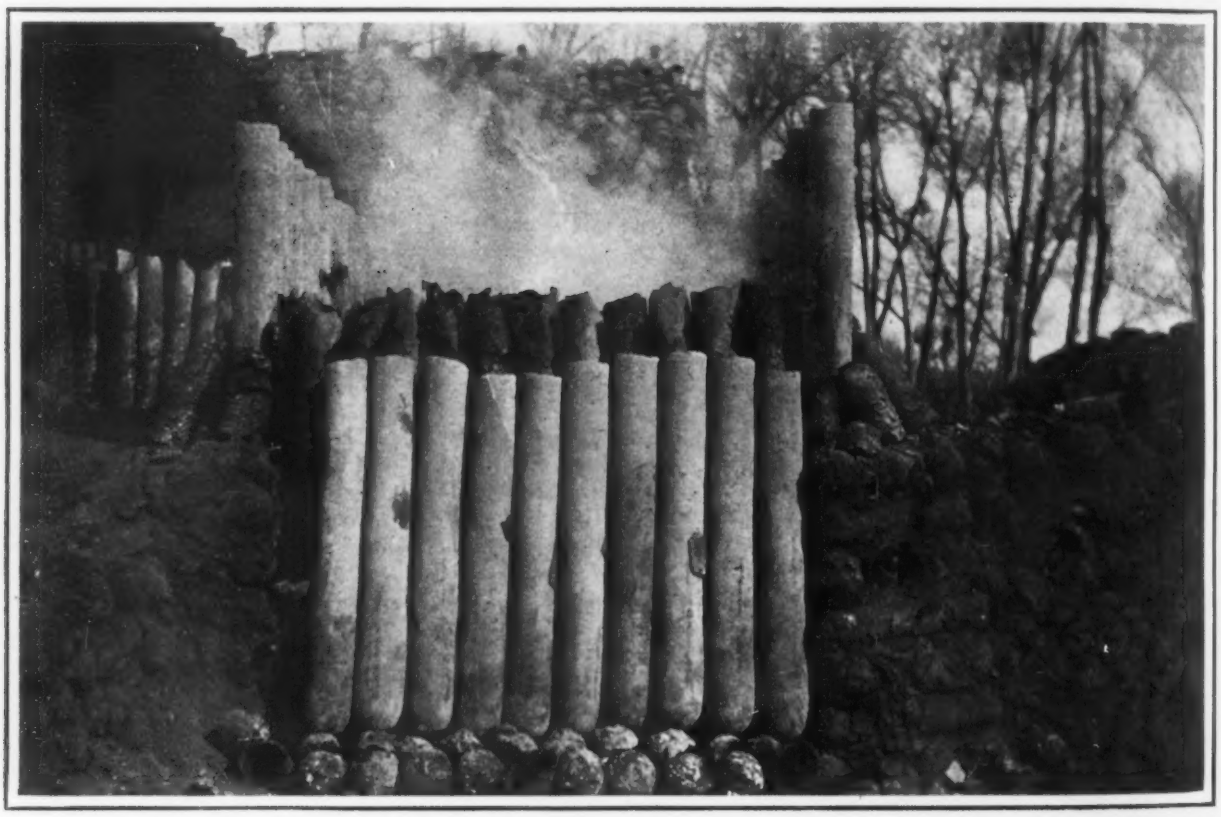
The Chinese have until the introduction of modern civilization exhibited little need for iron; cast iron pans for cooking, chilled cast iron points for ploughs, axles for carts and a few more objects of a simple nature being the principal forms in which cast iron was used. To provide saws, axes, knives, razors, etc., for so primitive a civilization, even a smaller quantity of steel was necessary. It so happened that in this region, lying near the center of the ancient civilization of the "Sons of Han," coal and iron ore are found in close proximity and thus formed the basis of essential enterprise.

The iron ore is not of especially good quality, according to modern standards, and the deposits are small, seldom being over 3 ft. in thickness. They are worked in the most primitive way, one of the illustrations showing how simple is the hoisting equipment and how small the shafts, which are also relatively shallow. The ore, after being brought to the surface, is sorted by hand into several grades and sold to the smelters. The grading seems to be purely empirical, for I could not learn that any method of ascertaining the iron content was ever practised.

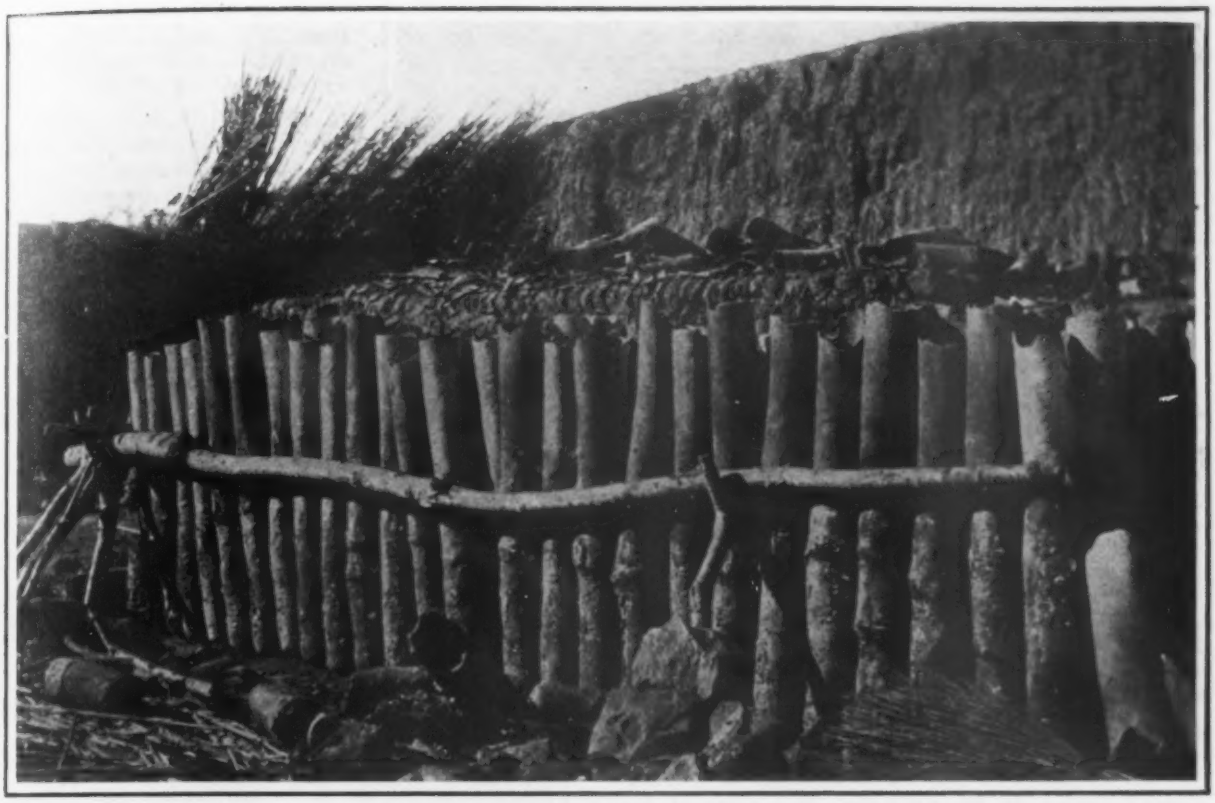
At the smelter the ore is mixed with half its weight of coal (not coke) and packed into cylindrically formed clay crucibles, 5 in. in diameter and a little less than 4 ft. long. From 250 to 275 of these crucibles are set upright inside an inclosure 12 by 6 by 4 ft. Spaces for the entrance of air beneath the crucibles are provided by the interstices between the loosely laid butts of old crucibles which form the floor of the inclosure. Over these is spread a layer of coal; the crucibles are set in place, with coal between them, until the inclosure is full, when the front is closed up, the furnace lighted at the bottom and allowed to burn by natural draft for three days. Then the front is taken down and the crucibles removed, a row at a time.

In the meantime, the coal in the crucible has robbed the iron ore of its oxygen and reduced it to metallic iron. Near the bottom of the crucible the heat has been sufficiently intense so the particles of iron have fused together into an irregular "bloom," but near the top the iron is in separate particles, from the size of a nut down to fine shot. The native hunters used the finer particles as shot and one evening I dined off a fine roast partridge which had been slain with this very material. Being pure iron it is relatively soft and therefore does not wear away the barrel, as cast iron particles would, and the smooth-bore matchlock which the hunter used was probably not dependent on fine adjustments.

The coal which was inside the crucible is not all consumed in the process but is partly converted into coke. This is carefully saved and used to mix with clay in making the crucibles. Rigid economy is characteristic of all the operations and the tops of the crucibles, which usually come through unharmed, are carefully saved. Thus the tops of the crucibles of one operation become the bottoms of the next set. The thick portion at the bottom fuses very hard and is used to make the porous bottom



Iron Ore Mixed with Half Its Weight of Coal Is Packed into These Crucibles. After the front is closed it is lighted and burned for three days; then the iron is taken out



Labor Is So Cheap and Economy Is So Necessary That the Used Crucibles Are Repaired and Used a Second Time. These are patched crucibles drying in the sun

for the furnace, as building material in constructing the sides and also in building house and courtyard walls. Even these manifold uses do not absorb all the supply available.

These primitive artisans are economical of labor as well as of materials. The clay from which the crucibles are made is spread in the roadway and the hoofs of the passing pack trains pulverize it, work organic matter into it and develop its plasticity. The crucible maker screens out the fine clay and throws the coarser portions back under the feet of the passing mules for further pulverizing.

The bloom of iron at the bottom of the crucible is worked up into wrought iron objects of every conceivable description. It is heated in a wood fire (so that it will not absorb carbon and become hard) and hammered until it is free of slag and earthy matter and gradually becomes welded into a solid ingot. These ingots are sold to iron-workers who work them up into the finished product, at the ex-

The Furnace for Melting Down the Cast Iron Has a Blower at the Back to Give a More Intense Heat. The crucibles are corrugated to give greater strength

This Tilting Furnace Is a Modern Improvement. A stream of molten iron is running into the casting ladle. The blowing engine is inside the box-like structure at the right

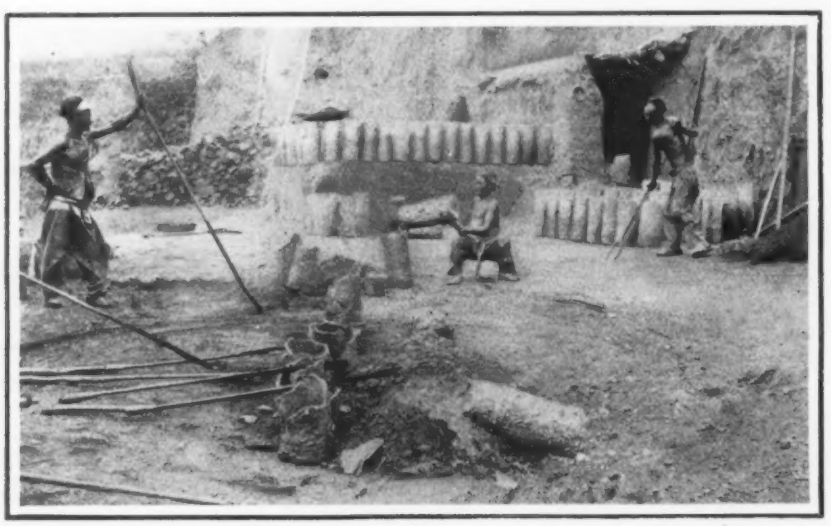
penditure of almost infinite labor. Mostly this is done by heating and hammering but the final finishing of thin tools, such as knives and razors, is done by scraping. The tool is finally converted into steel by the cementation process, which seems to be the common practice of all peoples. The finished tool is packed in charcoal and heated until it absorbs enough carbon to be converted into steel of the requisite hardness.

Wrought iron made in this way was at one time the sole source of supply of the Chinese artificer of wrought iron and steel, but for many years now scrap steel from foreign countries, especially old horseshoes, have become increasingly popular with the ironworkers as the source of raw materials for their trade. This competition of foreign materials in the principal centers of population has led to the modern decline of the industry, which Von Richthofen says was much more extensive at the time of his visit, 40 years ago, than it is now.

The small, loose particles of iron in the crucibles are used for making cast iron objects. They must be made to take up carbon so they will melt at a workable temperature and this is done in the following ingenious way. The smaller pieces of iron are mixed with coal and put into crucibles about 7 by 14 in. in size, and 70 to 80 of these crucibles are put into a furnace for which the draft is furnished by a hand blower. The original material is fairly pure iron but during the melting it takes up both carbon and phosphorus from the coal. The smelterman adds some impure coal, which they call "hei-tu" and which probably serves to introduce more phosphorus, making the melted cast iron very fluid, so that it runs well in the molds in casting. These primitive metallurgists do not know there is phosphorus and carbon in their cast iron and are quite unaware of the effect of these elements on iron and yet through experience they have worked out an elaborate technology that produces the desired result.

In preparing the molds for casting, these native artisans display extraordinary skill. The smaller objects are cast very thin and are yet quite perfect. In some cases wrought iron parts are placed in the molds and the cast iron poured around them, thus making a composite object, which is better for some purposes than one made wholly of cast iron.

A Fairly Extensive Operation Is the Casting of Small Objects



It Is a Practice to Dump the Contents of Several Crucibles into One Before Pouring

Copper and Brass Research Association

The formation of the Copper and Brass Research Association, an unincorporated, voluntary organization of the copper, brass and copper-alloy interests, has been announced by its president, R. L. Agassiz, president Calumet & Hecla Mining Co. The purpose of the association as stated in its by-laws is to stimulate by co-operative effort the use of copper, brass and copper-alloy products. Membership is open to producers of copper sold here or selling agents of copper in the United States, to fabricators of copper, brass and copper products generally in the United States and Canada, and to others directly engaged in or connected with the copper and brass industries.

Eligibility for membership in the association is determined by the Board of Directors, which is composed of the following:

Walter Douglas, Phelps Dodge Corporation; C. F. Kelley, Anaconda Copper Mining Co.; H. C. Bellinger, Chile Exploration Co.; Stephen Birch, Braden Copper Co. and Kennecott Copper Corporation; F. H. Brownell, American Smelting & Refining Co.; R. L. Agassiz, Calumet & Hecla Mining Co.; Charles Hayden, Utah Copper Co. and Chino Copper Co.; C. V. Jenkins, Ray Consolidated Copper Co. and Nevada Consolidated Copper Co.; D. B. Paull, Calumet & Arizona Mining Co. and New Cornelia Copper Co.; W. Parsons Tod, Copper Range Co. and Quincy Mining Co.; Robert H. Gross, East Butte Copper Mining Co.; J. Parke Channing, Miami Copper Co.; Fred S. Chase, Chase Rolling Mills Co. and Chase Metal Works; Henry F. Bassett, Taunton-New Bedford Copper Co.; Edward H. Binns, C. G. Hussey & Co.; H. J. Rowland, Rome Brass & Copper Co., and U. T. Hungerford, U. T. Hungerford Brass & Copper Co.

Making Molds for Cart Axles. A mold for a bell is seen at the left

The officers of the association are: R. L. Agassiz, president; Fred S. Chase and C. F. Kelley, vice-presidents; Stephen Birch, treasurer; W. S. Eckert, secretary. William A. Willis has been appointed manager of the association, which has offices at 25 Broadway.

A Small Cast-Iron Cook Stove and the Mold

Membership in the association now includes the following:

American Smelting & Refining Co., Anaconda Copper Mining Co., Braden Copper Co., Calumet & Hecla Mining Co., Calumet-Arizona Mining Co., Chile Exploration Co., Chino Copper Co., Chase Metal Works, Chase Rolling Mills Co., Copper Range Co., East Butte Copper Mining Co., U. T. Hungerford Brass & Copper Co., C. G. Hussey & Co., Kennecott Copper Corporation, Lake Copper Co., Michigan Copper & Brass Co., Miami Copper Co., Mother Lode Coalition Mines Co., National Brass & Copper Co., Nevada Consolidated Copper Co., North Butte Mining Co., New Cornelia Copper Co., Phelps Dodge Corporation, Quincy Mining Co., Ray Consolidated Copper Co., Rome Brass & Copper Co., Scoville Mfg. Co., Shattuck Arizona Copper Co., Taunton-New Bedford Copper Co. and Utah Copper Co.

Last year, the Pennsylvania is reported to have laid 82,500 tons of 130-lb. rails, enough for 404 miles of single track.

Automobile Race for the Steel Treaters Convention

George Desautels, chairman of the entertainment committee for the convention and exhibition of the American Society for Steel Treating in Indianapolis, Sept. 19 to 24, has issued an announcement of a match race between Frontenac and Duesenberg automobiles. This 50-mile race will be staged on the speedway, Wednesday, Sept. 21, at 10.00 a. m. This is the first time in the history of the speedway that the authorities have ever consented to let anyone stage a race of any kind on this track other than the annual race meet on Decoration Day. There will be three or four Frontenac cars and three Duesenberg machines. The manufacturers of these machines are located in Indianapolis and are great rivals. Other races are possible.

While the race will probably be the largest event and probably of the greatest interest to the visitors, Chairman Desautels has, nevertheless, arranged for golf and tennis tournaments and ball games between the Eastern and Western delegates. Dances, smokers, vaudeville and a continual round of enjoyment are promised for the visitors. The steel treaters are looking forward to having the largest convention and most enjoyable occasion in their history. Prospects for technical papers are up to expectations. The hotels are already reporting heavy reservations for the week of Sept. 19.

The importing of agricultural implements into Cuba is under consideration by Gil & Co., E. En. C., Compostela, Num. 135, Havana, Cuba, who are importers. They desire to deal directly with manufacturers. Samuel A. Jenkins, of the company, should be addressed on the subject.

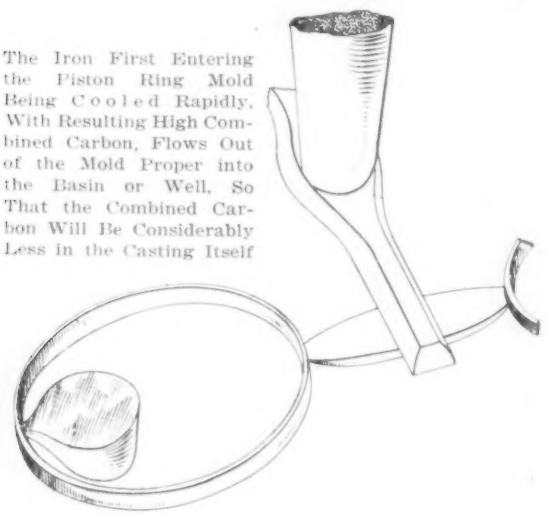
Casting Grate Bars for the Ordinary Clay Stove on Which the Cast-Iron Pans Are Set for Cooking

Mechanical Control in Foundry Problems

Several Cases Discussed Showing How the Application of Simple Mechanics Produced Results Which Chemistry Alone Did Not

BY J. H. HOPP*

FOUNDRIES generally accept patterns and equipment with approval or criticism based upon a superficial examination rather than a close study. At times designers are at fault in endeavoring to carry out certain theories; again, the pattern maker views the product of his art—he would call it—from a standpoint of simplicity of construction or beauty of finish, rather than from the practical utility of the pattern to that joint end of simplifying and foolproofing the molding and producing quality product. To indicate the need of a close co-operation between—not only the foundry superintendent and the pattern department—but the engineering department and machine shop superintendent also, certain simple examples have been selected to convey the value of an application of mechanical control of the product. Both mechanical and chemical control are essential; results, whether good or otherwise, are attributed to but one of these factors, which, it is hoped, will be clearly shown as erroneous.



The Iron First Entering the Piston Ring Mold Being Cooled Rapidly, With Resulting High Combined Carbon, Flows Out of the Mold Proper into the Basin or Well, So That the Combined Carbon Will Be Considerably Less in the Casting Itself

The first example is that of individual piston ring castings, commonly used by automobile and tractor engine builders. Individual piston ring castings, to meet the exacting requirements of present day machining operations, must be soft and particularly free from hard spots. It must be evident that first of all the proportions of the various elements must be suited to light castings requiring soft metal and having sufficient spring to meet the conditions imposed in a gas engine cylinder under heat.

Assume the conditions are piston ring castings of extremely light metal section, naturally subject to rapid cooling, and a complaint of hard spots, resulting in too much time required for machining and a high machine shop loss. It is an entirely conservative statement that 98 per cent of the foundrymen of the United States or Canada would attack that problem first, if not for all time to come, from a chemical and metallurgical standpoint.

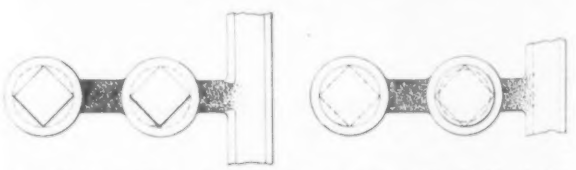
In a majority of castings, when the chemical proportions of the elements are correct, or shop conditions preclude the practicability of altering the mixture, it is possible mechanically to eliminate the difficulties encountered, or reduce them at least very materially, as will be shown. My recommendation would be, first, study the metal content of the castings. An accurate analysis, coupled with a simple knowledge of the action of the various elements, in combination, will generally show whether or not the metal mixture is satisfactory.

Referring to the accompanying drawing of a single ring, one will note at a point diametrically opposite to the point of entrance of the metal into the mold, but on the inside of the ring casting—to conserve flask space—a basin or well of a size dependent upon the size of the casting in question. The temper of the sand forming this mold, acting upon the fine stream of molten metal entering it, tends to increase the rate of cooling to an extent depending upon the amount of moisture present, and as a result we have higher combined carbon.

The addition of this basin or well permits the first iron entering the mold, which cooled rather rapidly, with a resulting high combined carbon, to flow out of the mold proper. In the interval the sand has become heated, and following this a more normal rate of cooling results. As a consequence of this drawing off of the original metal poured into the mold, the combined carbon will be considerably less in the casting itself. This practice has been universally adopted and eliminates "hard spots."

The method of controlling the piston ring castings in reality makes the molding operation foolproof against the tendency of using sand too wet or of uneven ramming or squeezing. The principle underlying the control can be applied with variations in many ways and will be found practicable and profitable. With a very desirable mixture, 50 per cent, say, of all the castings produced cannot be machined or at least only at a very considerable expense over and above that required to machine the other 50 per cent of castings.

Another example is shown in the molding of plugs for steel barrels, threaded as indicated and provided with square head for application of wrench. One hundred per cent appear acceptable, but 50 per cent, to repeat, are machinable and 50 per cent are not considered to have satisfactory metal for machining, though all metal came from the same ladle and through the same gate.



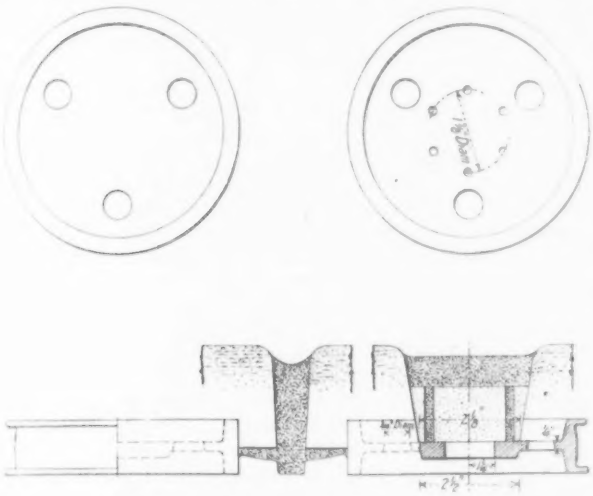
In Molding Threaded Plugs As Indicated, Half of the Castings Were Found Not Satisfactory for Machining, Although All the Metal Came from the Same Ladle and Through the Same Gate

By Making the Molds, Not in the Drag, but in the Opposite Manner, and Filling Up the Section of the Casting Originally Cupped to Save Weight and to Eliminate Hanging Sand in the Cope, the Trouble Was Overcome

The flask used was a 10 x 24-in. snap type and the match-plate actually contained 60 patterns, four rows of 15 each, and a single gate with a single main runner lengthwise, from which at various points the metal was conducted to the central rows of patterns on either side of main runner and by small gates from these castings to the two outer rows of patterns.

*From an address delivered before the Southern Metal Trades Association. Mr. Hopp is secretary and chief engineer of the Charles C. Kawin Co., Chicago.

The importance of the case may be apprehended by suggesting a contract's being involved stipulating the furnishing and machining at a fixed price of 250,000 pieces and yet half of the foundry production proved too hard to machine. One could stop off the outer rows of molds, which are the ones containing hard castings,



By Rearranging the Method, Shown in the Upper Part, of Molding Gas Stove Hose Connection Fittings, Castings Resulted When Molded as in the Lower Arrangement, Which Could Be Threaded in the Interior

but this would be very costly because production would be reduced. One could make new pattern equipment with less patterns in a smaller size of flask, but proportionately one would not get as many patterns in the same equivalent area. On an order of 250,000 pieces the pattern expense could be considered negligible, but as all of these are items of cost they must be considered.

The castings under consideration were in the drag of the mold, and the molding was done in the opposite manner from that originally planned. The sketch shows this change together with one other, that of filling up the section of the casting which originally was cupped out to save weight. This last change being made necessary to eliminate the hanging sand in the cope. Production as a result was not decreased.

Each casting weighed slightly more than under the previous arrangement. Rejections due to hardness were entirely eliminated. There were, of course, the usual rejections due to various molding causes. The added weight of metal, however, was an item in the total order, but insomuch as the contract was taken at a fixed price, and under the conditions of pattern equipment offered, the foundry had no recourse, whereas a careful diagnosis of the problems at hand before bidding upon the work or accepting the contract would undoubtedly have placed the foundryman in a position to quote a price including the additional metal.

An example of chemical control that should prove interesting is one of a product mechanically correct and upon which fact the manufacturer fought until bankrupt. The castings failed in service principally from leakage. The class of castings is best described as seamless steam jacketed kettles and evaporating pans, tested to 150 lb. hydrostatic pressure, and in daily use for rendering, refining, soap making, cooling fluids and semi-fluid substances, preparing food specialties, candies, medicines, tooth paste, drilling compounds, paints, etc.

In explanation the kettle, exterior jacket, stay-bolts and outlet are cast complete in one piece. The inner shell of kettle is very thin, resulting in quick heating; and casting the stay-bolts between inner shell and steam jacket outer shell as an integral part of the casting results in unusual strength and reinforcement of the thin shell.

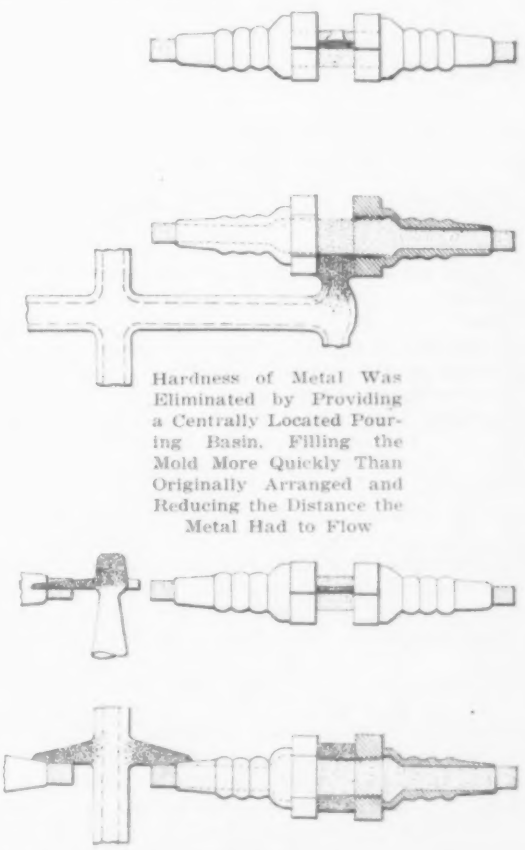
The original company produced kettles of 175 gal. capacity, maximum, but the metal problem was not solved and the losses were of such moment as to bring on bankruptcy. The parties who purchased the rights, etc., at the bankrupt sale, and who have made these seamless kettles satisfactorily, now manufacture kettles up to 1200 gal. capacity.

To appreciate fully the complexity of these castings conceive a kettle of 800 gal. capacity. That means about 6 ft. diameter by 6 ft. high, with 90 sq. ft. of heating surface. This 90 sq. ft. of surface has 480 stay-bolts connecting it to the heavier outer steam jacket shell. This means 960 points of metal junction and that many possibilities of a leak.

The metal mixture was perfected and then a "guarantee without limit" was given. I believe it is the only guarantee of its kind in connection with pressure apparatus or, in fact, any kind of machinery. The guarantee is as follows: "To at *any time* replace any kettle or parts found defective in workmanship or material upon return of part claimed defective, transportation charges prepaid." The pig iron is not judged by fracture nor charged into the cupola by rule of thumb. Coke and pig iron are not bought without certainty of high quality.

Another sketch covers the molding of a pulley 6 in. in diameter, the rim of which is machined on both sides and the face machined to form a double shrouded idler pulley. These castings are machined in an automatic machine performing the several operations simultaneously. Should any tool become dulled its replacement requires complete shutdown of machine.

A study of this casting revealed on the drag side of the rim—and after eliminating such factors as cold



Hardness of Metal Was Eliminated by Providing a Centrally Located Pouring Basin, Filling the Mold More Quickly Than Originally Arranged and Reducing the Distance the Metal Had to Flow

iron, too wet a sand and unnecessarily hard ramming—that the time of pouring the casting was too great and the distance that the metal had to travel was too long. A casting of 6 in. in diameter having a circumference of approximately 19 in., resulting in the metal having to travel 9½ in. in each direction from the gate.

The sketch will show that a centrally located pouring basin was recommended, which permitted filling of the mold much more quickly than before. Of course, the total area of the pencil gates—as we term them—was greater than that of the single gate, but the metal in no case was required to travel more than one-sixth of the circumference and therefore would not give up its heat as rapidly and as a consequence the combined carbon would be more nearly uniform throughout the casting. In the practice as found, the combined carbon

was from 10 to 20 points higher on the drag side. This change in pouring, without any alterations in the metal mixture, will eliminate we believe the difficulties causing rejection.

Innumerable examples of this general sort of thing could be given, but the cases cited, it is believed, will suffice to show that one cannot afford to pour castings too slowly. On the other hand, it can also be said that castings should not be poured too fast. In substantiation of this, consider a six-cylinder automobile casting weighing approximately 240 lb. The production in this particular case was 38 to 40 per day for a given number of core fitters and assemblers and the scrap generally equalled the production. The entire mold in every particular was made of dry sand and it was the contention of the manufacturer that he followed good accepted foundry practice and in so doing could see no reason why he should not expect a practically perfect production of these castings.

As stated before, the casting weighed 240 lb. A cubic inch of cast iron weighs approximately ¼ lb. Roughly speaking, the contents of this mold was 960 cu. in. The manufacturer's contention was that the iron entered the mold so fast that the gases did not have time to form and, therefore, he could not account for the gas pockets in the bore of these cylinders, which caused their rejection.

It was pointed out that irrespective of any gas formed by contact of the molten iron in the cores, there had to be removed from this mold 960 cu. in. of air. It was proved quite conclusively that the practice followed was in reality preventing the escape of a portion of this air—and by placing four small risers in various parts of the cope side of the mold and pouring the mold in 12 sec. instead of 8, giving the air a chance to be liberated, there was produced virtually 100 per cent perfect castings, that is, free from the defects causing their rejection prior to this change.

It can be stated safely that but a small proportion of all castings finding their way to the scrap heap are produced by pouring too fast, but the illustration mentioned is convincing of one thing and that is that we cannot carry the speed of pouring to the extreme and secure quality any more than we can increase production indefinitely and still maintain quality.

As a further illustration of the principle governing the rejection of the castings discussed previously, attention is called to the gas stove hose connection fittings shown in another sketch. This shows the improper method of making these and one which has resulted in a casting too hard to be threaded in the interior, and it also shows the proper way of pouring to assure ease of machining.

My conclusion must be plain. The co-partners contributing jointly to foundry results are chemistry and simple mechanics.

SILICON ADDITIONS TO STEEL

Effect of Early and Late Introduction on Gas Content and Rolling Discard

The effect of the time of adding silicon in the physical properties and the gas content of open-hearth steel is exhaustively discussed by E. Piwowarsky in *Stahl und Eisen* for June 10, 1920. An abstract of this important article has been published by *Technical Review*, London, as follows:

A number of opinions are held regarding the deterioration of steel by the small quantities of silicon present in the ordinary commercial steels, principal among these being the view that the silicic acid formed by the action of the ferrous oxide is retained by the steel in the form of a finely divided emulsified product, and that this weakens the cohesion of the steel, while the excess of silicon impairs the weldability of the material. The writer carried out a number of experiments and observations in steel works, with a view to clearing up this question, and determining whether and how it would be possible to enhance the good effects of silicon and to suppress the deleterious effects. A number of test heats were made, and the silicon added (in the form of ferrosilicon) at different stages of the pouring. It was found that when the ferrosilicon was added too early, the silicon losses were considerable and the quantity of silicon left in the final product was smaller than when the addition was made as late as possible.

A further series of heats was carried out to determine the effect of the gases, incorporated in the steel, on its qualities. For this purpose, the melts were made, as far as possible, using the same material and the same furnace. The ferromanganese required for deoxidizing the bath was added when the charge was completed, and time had been allowed for a state of equilibrium to set in between the bath and the slag. The ferrosilicon in half the heats was added by placing it in the bottom of the ladle at the usual time and in the other half it was added as late as possible by means of a special box arranged over the ladle and fitted with a flap-door at the bottom. The quantities of silicon were so selected as to give a final percentage of 0.20 to 0.22 per cent in the steel, as it was found that only with these percentages was the difference between the methods of adding the silicon to the bath sufficiently marked to be observed.

The charges were cast in round chill molds of 540 kg. in sets of 34 ingots, except in the case of the heats containing over 0.5 per cent carbon, which were cast in 750 kg. square ingots. The ingots were always cast from the bottom. Before the steel was cast, the ladle was left standing for 10 minutes or so, this measure being necessary especially in the case of cold charges, as otherwise the rolling discard of the steel is increased, due to the presence of the "emulsified" silicic-acid in the steel. Gas samples were then drawn off by a special arrangement. The results show that the gases given off by the liquid steel, where the silicon is added prematurely, contain a very large proportion of CO, which is the most harmful gas as regards the formation of blowholes. Further, when the silicon is added late, the hydrogen content falls with decreasing temperature, and finally ceases, whereas it increases when the silicon is added too early.

Rolling tests were also carried out to show the amount of discard resulting (from the presence of occluded gases) when the silicon was added early and late. The following table shows the results:

Test No.	C.	Mn.	P.	S.	Si.	Results of Rolling: Good Material, Kg.	Discard, Kg.	Discard, Per Cent
			(a) *Ferrosilicon Added at Usual Time*					
1.	0.30	0.69	0.051	0.028	0.18	24,200	14,000	36.50
2.	0.39	0.63	0.060	0.036	0.20	27,200	12,800	32.00
3.	0.37	0.51	0.053	0.044	0.20	34,400	12,100	26.00
4.	0.32	0.47	0.014	0.037	0.19	9,300	21,740	70.00
			(b) *Ferrosilicon Added Late*					
5.	0.36	0.54	0.027	0.038	0.22	30,250	6,800	18.00
6.	0.35	0.57	0.043	0.032	0.24	32,700	3,700	10.00
7.	0.31	0.52	0.057	0.038	0.25	28,600	4,900	14.60
8.	0.40	0.54	0.027	0.040	0.26	36,200	4,100	10.00
9.	0.37	0.58	0.064	0.040	0.25	34,900	3,800	9.80

The author concludes from his investigations that a high temperature favors the separation of the silicate present in the form of a product of deoxidation on the tapping of basic silicized open-hearth heats; and that when the ferrosilicon addition is made at as late a stage as possible, this reduces the percentage of gas in the final product, in the liquid, solid and rolled states.

The American Red Cross is making a drive to get the smaller industrial companies interested in first aid work. To that end classes are being organized by the Pittsburgh chapter for the instruction of those employees of companies which do not feel they can afford the expense of holding classes in their own plants. Any company in Allegheny county which wishes to start its own class, the Red Cross will assist upon application to the Pittsburgh chapter. Classes are to be held in room 1003 Chamber of Commerce building, once a week beginning Sept. 15, at 8 p. m. The fee is $5 per member and the course comprises 10 lessons.

Steel Labor Less than Half Employed

Figures of Labor Bureau Show Extent of Falling Off and Trace Curve of Employment—Curves Show Also Unfilled Orders and Pig Iron Produced

WASHINGTON, Aug. 23.—It is estimated that the number of persons employed in the iron and steel industry in July, 1921, was 283,648 less than at the peak of employment in June, 1918, when 532,798 were engaged. The falling off therefore was 53.2 per cent. The second peak in the number of persons employed in the industry, by which is meant the blast furnace, steel works and rolling mill departments, was in March, 1920, with a total of 502,133, so that the decrease in July of this year was 50.4 per cent. The figures, prepared by the Bureau of Statistics, Department of Labor, are based upon reports showing the number of persons employed by the United States Steel Corporation, and reports of the Bureau of Census.

Reports of the Steel Corporation show that the average number of persons employed by it in the manufacturing properties in 1914 was 131,616. The average number of persons employed in the iron and steel industry in 1914, according to the Bureau of Census, was 307,356. Thus the employees of the corporation constituted 42.82 per cent of all persons in the industry in that year.

Index Figure and Estimated Number of Persons Employed in the Iron and Steel Industry

100 = Base, January, 1916 = 383,308

1915		1917		1920	
Jan.	74 = 283,648	July	130 = 498,300	Jan.	127 = 486,801
Feb.	71 = 272,149	Aug.	134 = 513,633	Feb.	129 = 494,467
Mar.	77 = 295,147	Sept.	133 = 509,800	Mar.	131 = 502,133
Apr.	80 = 306,646	Oct.	135 = 517,466	Apr.	130 = 498,300
May	82 = 314,313	Nov.	136 = 521,299	May	121 = 463,803
June	85 = 325,812	Dec.	136 = 521,299	June	128 = 490,634
July	87 = 333,478			July	126 = 482,968
Aug.	90 = 344,977	1918		Aug.	125 = 479,135
Sept.	93 = 356,476	Jan.	134 = 513,633	Sept.	128 = 490,634
Oct.	97 = 371,809	Feb.	135 = 517,466	Oct.	128 = 490,634
Nov.	97 = 371,809	Mar.	137 = 525,132	Nov.	124 = 475,302
Dec.	97 = 371,809	Apr.	136 = 521,299	Dec.	113 = 433,138
		May	138 = 528,965		
1916		June	139 = 532,798		
Jan.	100 = 383,308	July	137 = 525,132	1921	
Feb.	102 = 390,974	Aug.	138 = 528,965	Jan.	93 = 356,476
Mar.	105 = 402,473	Sept.	137 = 525,132	Feb.	93 = 356,476
Apr.	104 = 398,640	Oct.	138 = 528,965	Mar.	89 = 341,144
May	108 = 413,973	Nov.	135 = 517,466	Apr.	81 = 310,479
June	109 = 417,806	Dec.	138 = 528,965	May	79 = 302,813
July	110 = 421,639			June	75 = 287,481
Aug.	113 = 433,138	1919		July	65 = 249,150
Sept.	115 = 440,804	Jan.	136 = 521,299		
Oct.	115 = 440,804	Feb.	128 = 490,634		
Nov.	117 = 448,470	Mar.	125 = 479,135	*Averages:*	
Dec.	118 = 452,303	Apr.	119 = 456,137	1915	86 = 329,006
		May	114 = 436,971	1916	110 = 420,361
1917		June	114 = 436,971	1917	129 = 496,062
Jan.	122 = 467,636	July	117 = 448,470	1918	137 = 524,493
Feb.	123 = 471,469	Aug.	121 = 463,803	1919	115 = 442,401
Mar.	124 = 475,302	Sept.	122 = 467,636	1920	126 = 482,329
Apr.	124 = 475,302	Oct.	81 = 310,479	1921*	82 = 314,860
May	127 = 486,801	Nov.	95 = 364,143		
June	129 = 494,467	Dec.	113 = 433,138		

*Seven months.

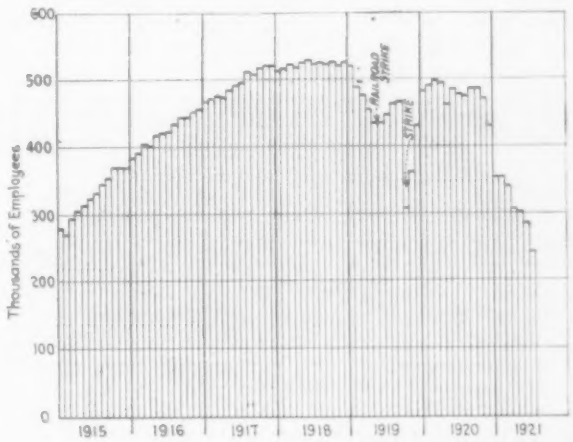
A table prepared by the Bureau gives an index number of persons employed in the industry by months from January, 1915, to July, 1921. The average for the index numbers for 1915 was 85.83, with the base of 100 applying to January, 1916, when 383,308 persons were employed in the industry. This period is used as the base because it marked the first complete and satisfactory reports the Bureau had received regarding employment in all of the industries reporting employment figures.

The Steel Corporation in 1915 had 140,875 persons employed. Using this as 42.82 per cent of all persons employed in the industry in 1915, then the total number employed was 328,993. With this number engaged in 1915, and an average index of the number employed fixed at 85.83, then 1 in the index number would be equivalent to 3,833.08 persons.

Upon this basis of estimate, the computation shows the following number of persons employed at the dates specified as:

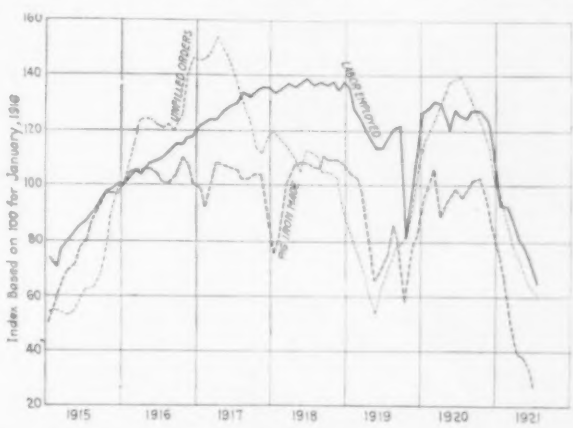
January, 1916	383,308
June, 1918	532,798
March, 1920	502,133
July, 1921	249,150

An accompanying table presents the index numbers referred to, together with the estimated number of persons employed from January, 1915, to July, 1921.



Trend of Steel Mill Employment for Seven Years

According to these figures the peak of employment in June, 1918, was 39 per cent greater than in January, 1916, and no month in 1918 showed an excess lower than 34 per cent. In the next high point, March, 1920, employment was 31 per cent greater than in January, 1916. In July, 1921, only 65 per cent as many were employed as in January, 1916.



Concurrent Fluctuations of Steel Mill Employment, Pig Iron Production and Corporation's Unfilled Orders

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Portland cement production of the United States in July amounted to 9,568,000 bbl., the heaviest month of the year; 52,036,000 bbl. have been produced to date in 1921 and 50,376,000 bbl. shipped. Production in seven months is about 52 per cent of the corresponding figures for 1920.

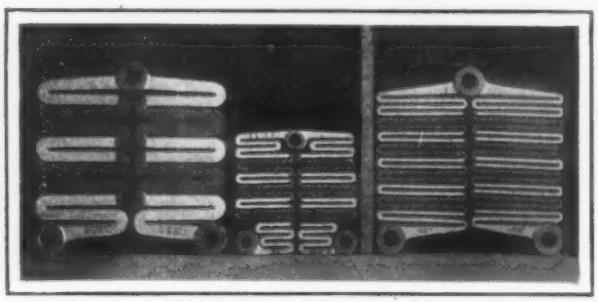
A new rate of $1.12 per ton on limestone from Fairport Harbor on Lake Erie to Youngstown furnaces is announced by the Baltimore & Ohio Railroad.

NICKEL IN IRON CASTINGS*

Alloy Resistance Grids Having Unusual Properties—Effect of the Nickel

One of the special uses to which the electric furnace has been put recently is the melting of an alloy of nickel and cast iron for the production of electrical resistance grids. The metal sections of these grids, as shown by the illustration, are quite uniform for each pattern, but there is, among the various patterns, a variety of thicknesses. The cross sections vary from ½ by 3/16 in. to as small as ⅛ by ⅛ in. The electrical resistance of a perfect casting lies within 10 per cent above or below the fixed listed resistance for each pattern. Good molding is essential to success in the making of these grids, for with absolutely correct metal a variation of 0.01 in. in width and thickness of section on some of the patterns may mean as much as 12 or 14 per cent variation in resistance.

The service for which these castings are intended demands that the metal, even in the smallest castings, be very soft, showing an open, gray, highly graphitic structure in order that they may be resistant to shock,



Electrical Resistance Grids

and stand up well under rough usage. The metal used for this purpose is a gray iron alloyed with 4 to 5 per cent of nickel, which element, when the composition of the alloy is correct, imparts toughness and pliability to the metal and helps to overcome the tendency of metal to run white and become brittle because of the rapid cooling action of the sand mold. When cold, these castings can be twisted into various shapes, taking a permanent set without breaking. The alloy has approximately double the electrical resistance of ordinary cast iron.

Following are the specifications and the analyses of three heats showing a normal resistance:

	Specifications. Per Cent	Analysis of Three Heats Per Cent	Per Cent	Per Cent
Silicon	2.40 to 2.60	2.40	2.48	2.47
Sulphur	Under 0.05	0.010	0.013	0.018
Phosphorus	Under 0.08	0.055	0.055	0.074
Manganese	Under 0.40	0.13	0.08	0.10
Total carbon	3.60 to 4.00	3.92	3.92	3.82
Nickel	4.00 to 5.00	4.47	4.24	4.55
Copper	0.50 to 0.70	0.67	0.67	0.67

On account of the nickel content of the metal, which raises the setting point of the alloy considerably above that for cast iron, causing the alloy to be sluggish at a temperature at which cast iron would have great fluidity, it is necessary to cast at a much higher temperature than would be required for cast iron. The temperature of the metal in the ladle, as determined by a Leeds & Northrup optical pyrometer, runs between 2800 and 2900 deg. Fahr. (1537 to 1592 deg. C.).

The urgency of the situation made necessary the use, largely, of such materials as happened to be in stock in our works, consequently much of the equipment is crude. The furnace is three-phase, combined open-arc resistance type, without bottom electrode; is stationary, and of 1000 lb. capacity. The hearth is built of magnesite brick and grain magnesite while the roof is made of special fireclay brick. Alternating current is delivered by the power company at 22,000 volts. It is stepped down to 220 volts in three 150-kv.-a. single-phase, Westinghouse, lighting transformers, and further reduced to 90 or 110 volts in three autotransformers. These transformers, while not intended for electric-furnace use, have stood up remarkably well, having at times carried an overload of more than 100 per cent for an hour. Four-inch Atcheson graphite electrodes are used, and the regulation is by hand. A switchboard, located in a convenient place for the furnace operator, contains a voltmeter, three ammeters, and the power switch.

The required amounts of pig iron, scrap and nickel ingot, together with some retort carbon, are charged into the furnace, the power turned on, and the melting done as quickly as possible. The melting down is carried on at the higher of the two possible voltages, viz., 110-volt, and the input of current fluctuations from 0 to 3000 amp. per phase; the melting requires about 1 hr. to 1 hr. and 10 min.

As there is not enough time to allow for chemical determinations, the necessary adjustments are made from observations of test pieces so shaped as to indicate the character of the metal as cast in all sections from a feather edge up to ½ in. Several of these test pieces are cast in sand during the adjusting and heating period, and additions of silicon and carbon are made until the fracture of the test piece shows the metal to be normal. As stated before, the temperature, to be high enough to run the smallest grids, should be from 2800 to 2900 deg. Fahr. in the ladle. The adjusting and superheating of the metal requires from 30 to 40 min., thus making the time of the heat from 1½ to 2 hr.

One of the peculiarities of this alloy of cast iron and nickel is a rejection of graphite from the metal when it is just melted, but when the metal is superheated, it again takes up the carbon thrown out at a lower temperature. It is this property of nickel, throwing out graphite on cooling, which helps to make the grids soft and gray in the smaller sections and incidentally keeps the electrical resistance high.

The average power consumption, covering a 9-mo. period of operation, was 1100 kw.-hr. per ton, while the electrode consumption for the same period averaged 28 lb. per ton. These figures are rather high, even for such a small furnace, but considering that the operation was, in a sense, experimental, and the installation more or less a makeshift, it is probably not as bad as the figures would seem to indicate. With an ideal installation, consisting of a tilting furnace, suitable furnace transformers, and automatic regulation, it would be possible to reduce the current consumption by reason of having a smoother operation, greatly lessen electrode consumption by having less breakage, shorten the time of the heat considerably, reduce the amount of labor necessary to operate the furnace, and thereby decrease the cost of metal in the ladle.

The advantages of this method of melting may be stated briefly as follows:

There is no picking up of sulphur in the melting process, therefore all of the scrap alloy, such as gates, sprues, defective grids, and over iron can be charged back into the furnace and nothing wasted. In fact, it is quite possible and just as easy to run a heat of 100 per cent scrap as it is to run one made up of pig iron, scrap, and nickel.

The possibility of adjusting the metal to the proper composition while it is in the furnace.

The attaining of the high temperature necessary to cast the metal into very small section castings so that it will run clean, and remain gray and tough.

*From a paper to be presented at the fall meeting of the American Institute of Mining and Metallurgical Engineers at Wilkes-Barre, Pa., by D. N. Witman, metallurgist, Westinghouse Electric & Mfg. Co., Trafford, Pa.

The Fischer Scrap Iron Co., Stevens Point, Wis., has changed its corporate title to F. & G. Auto Parts Co. It will continue to deal in waste metals and other materials but will specialize in marketing useful parts of passenger vehicles and motor trucks purchased and scrapped in the last two years in the conduct of the business. Hyman D. Fischer and Joseph Goldstein are the proprietors of the business.

Car repair contracts received by the Youngstown Steel Car Co., Niles, Ohio, will keep its plant operating to capacity into the first quarter of 1922 and afford employment to 350 men.

Methods of Preparing Blast Furnace Slag

Divided into Four Classes by Carnegie Steel Co. According to the Specific Use to Which It Is to Be Put

METHODS of preparation of blast furnace slag are described in a comprehensive way in a book compiled by the Carnegie Steel Co., Pittsburgh, to emphasize the properties and commercial uses of the material. From advance pages of the book, the subjoined descriptive matter has been obtained and the accompanying illustrations have been reproduced.

There are four general classes of slag mentioned: air cooled bank slag, fork slag, pancake slag and honeycomb slag. Study of blast furnace slag has been carried on for 16 years, and the forthcoming book of some 38 pages discusses, among other things, the commercial sizes of concrete and the mixtures used for various purposes, and it incorporates tests to prove the reliability of the slag and general physical characteristics necessary in the construction of buildings, roads and other places where the slag may be utilized.

To make air cooled bank slag the white hot molten liquid is run from the slag notch of the furnace into the slag ladles, which hold 200 to 260 cu. ft. or some 7½ to 9½ tons of slag, and which can carry the slag in liquid form as far as eight to ten miles. On the edge of a spoil bank they are dumped and from the slag deposited in this method the greater amount of the principal commercial slag is produced.

The Principal Commercial Slag, Used for Ballast, Road Construction and Mass Concrete Work, Is Obtained from Banks Like That Here Shown at the Lorain Plant of the National Tube Co.

On the bank the slag gives up its heat to the air and to previous deposits with which it coalesces to form a hard stone-like substance. Here it weathers from two weeks to one year or more, dependent upon magnesia content and demand. During this period of seasoning any free lime is removed by natural agencies and thus disintegration of the slag, when in practical use, is eliminated. Meantime, no refuse or waste material is dumped on the bank from which slag is to be taken for sale or use.

The properly seasoned slag is excavated from the bank by blasting or by steam shovel or by both, loaded on cars and hauled to the crusher and the larger pieces broken up. It is then passed over a magnetic separator to extract the iron and from thence is elevated by belt conveyor to revolving screens where it is graded into commercial sizes and is ready for the market.

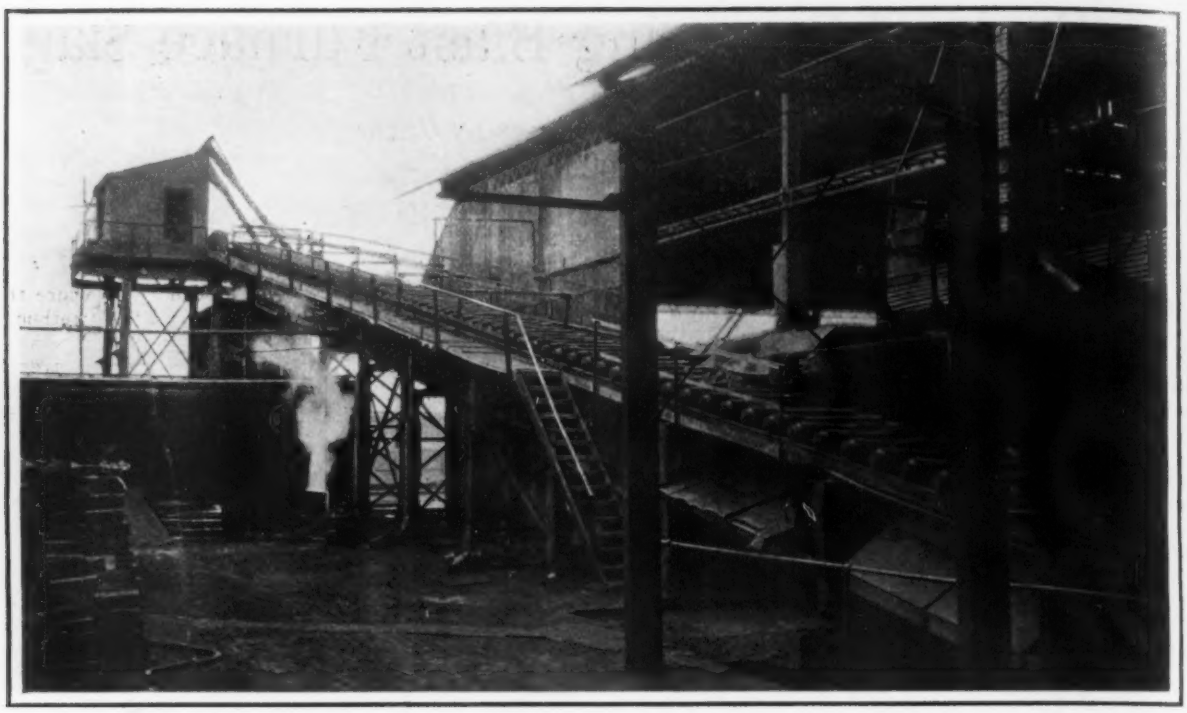
Fork slag corresponds in size and general characteristics to rough bank slag. It is made at the Columbus steel works of the Carnegie Steel Co., where there is no crusher and where, therefore, earlier methods of disposal are still in use. The slag as it issues molten from the blast furnace is led in long, narrow trenches formed in sand where it is allowed to cool. When sufficiently cool to handle, the long strips or molded pigs of slag are broken up with sledges. The larger pieces are loaded by hand and the smaller by forks into cars to be hauled away to the dump for final disposition after seasoning. Fork slag of necessity carries some sand with it from the trenches and it is offered for mass concrete, road work, etc.

Pancake slag is made at the Isabella furnaces of the Carnegie company. The slag is cast on a machine like a pig casting machine into large flat molds about 20 x 45 in. and 2 in. deep. The pans of slag travel along an endless chain conveyor and, when within a short distance of the dumping point, the cooling of the slag is accelerated by sprinkling with water. This process cracks the thin sheets of slag and the drop into the car breaks them into small pieces. Much of this form of slag has been used as a concrete aggregate in fireproof construction but the production is limited and cost of maintenance of machine high. In consequence this method was for a time discontinued as a mode of preparation of slag for regular uses.

There has beeen a demand recently for a heavy dense blast furnace slag for use as an abrasive, also for the manufacture of ornamental brick. The Isabella furnaces make ferromanganese and the beautiful green slags from them can be manipulated as pancake slag for special uses.

Honeycomb slag, its name derived from its appearance, is the result of numerous experiments to lessen weight without decrease in strength. By the method finally perfected, a slag has been produced that weighs but 30¼ lb. per cu. ft. and will make up into concrete with a weight as low as 105 lb. per cu. ft., compared with the usual 165 lb.

A large rectangular tank, 40 x 120 ft. and 6 ft. deep, built of brick is located near the furnace. The bottom is cooled, cleaned and dried, and then the molten slag is run from the furnace directly into the tank to a depth of about 6 in. When this layer has cooled suf-



Pancake Slag, Cast on a Machine Like a Pig Casting Machine, Has Been Used as an Abrasive and in Making Ornamental Brick

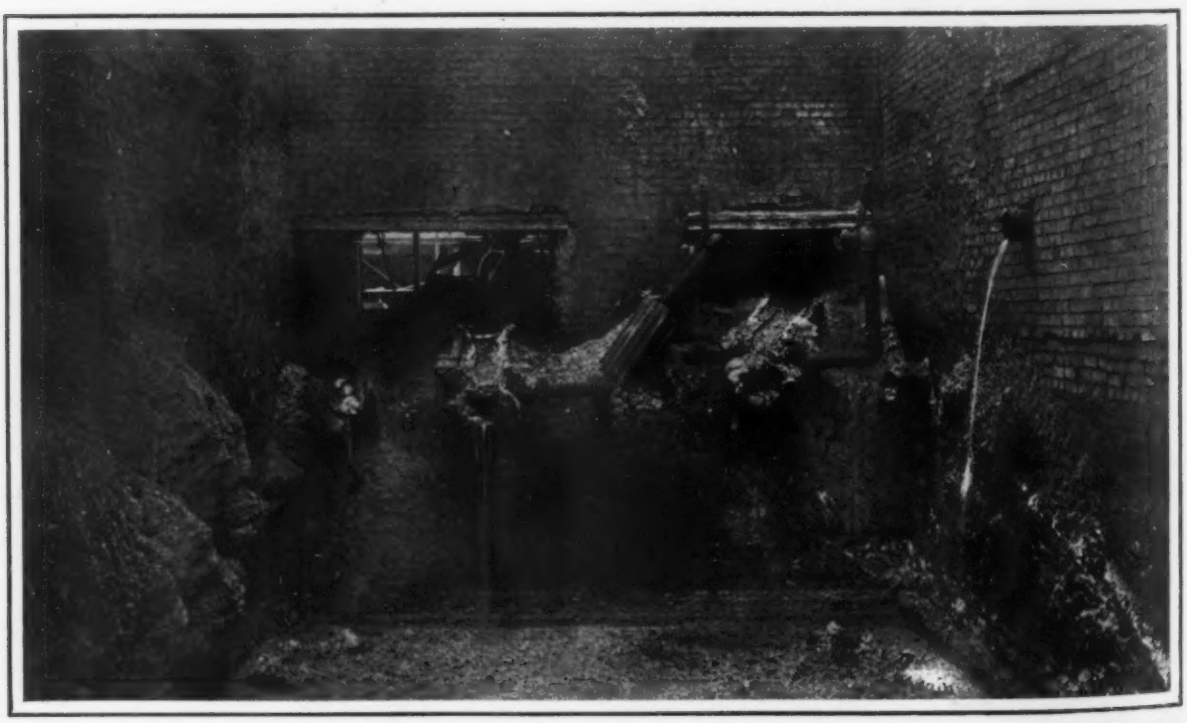
ficiently, it is sprayed with water, cleaned and dried; then another 6 in. layer is poured, and so on until the tank is filled. It is then broken up, excavated by steam shovel, loaded into cars, sent to the crusher and crushed and graded to the various commercial sizes.

Granulated slag is cooled by water immediately on its passage from the blast furnace. It is used in the manufacture of Universal portland cement, and as a substitute for river sand and also as satisfactory filling material. Two methods of granulation are at present in use:—

1. The open tank method.—Common granulated slag is made by running the molten slag directly into a tank or pit partly filled with water by simple contact with which disintegration is accomplished. This product contains many light, fluffy particles in addition to those that are finer and denser. Much of it is as coarse as popped corn which, when the color is light enough, it rather resembles. Owing to its great porosity much of it floats until it becomes cold and saturated with water; only the denser particles settle at once to the bottom of the tank.

2. Improved water jet method.—The molten slag is delivered from the furnace through a trough to a concrete pit at the edge of which the trough takes the form of a large nozzle fitted with an annular tube from which water issues in the form of a spray delivered through a 4 in. pipe under 30 to 40 lb. per sq. in. pressure. This causes disintegration and partial cooling, which operations are completed by contact with the water in the pit. By the force of the impact with the water the slag is driven against the opposite side of the pit. Slag thus granulated resembles that made by the open tank method except that the largest particles are much smaller and the entire product is somewhat more dense.

Granulated slag is removed from the pits and loaded into cars by grab bucket and crane. It will weigh



Slag Tank at the Isabella Furnaces of the Carnegie Steel Co., Where the Jet Method Is Used in Granulating the Slag

The Trough at the Concrete Pit Takes the Form of a Nozzle Fitted with an Annular Tube from Which Water Issues Under Pressure

from 50 to 60 lb. per cu. ft., dependent upon the kind of ores smelted, moisture, condition, etc.

International Resolutions on Emigration Supervision

WASHINGTON, Aug. 22.—The International Emigration Commission, composed of representatives of fifteen nations, which has been in session in Geneva, Switzerland, has adjourned after adopting a number of resolutions, according to a cable received by Ernest Greenwood, American representative of the international labor office.

Among the resolutions adopted were (1) supervision over all kinds of agents interested in promoting emigration and the abolition of all emigration propaganda based on false information; (2) supervision and control, by competent authorities, of the recruiting of workmen in foreign countries, confining such recruiting to agencies authorized by the State; (3) safeguarding the state of the labor market of countries of emigration and immigration; (4) contracts containing clauses for the deduction of traveling expenses from the wages of the immigrant shall be declared null and void by competent authorities of countries of emigration, where such clauses are not in accord with existing legislation.

Tinplate Manufacture in Norway

In 1916, when the difficulty of procuring tin plates (which were not made in Norway) was severely felt by the Norwegian canning industry, a company was formed, with a capital of 3,000,000 kr., to establish rolling mills for the production of steel plates, and a tinning plant for their conversion into tin plates, at Simonsvik, near Bergen. The capacity of the works, which were to be known as the Norsk Valseverk, was to be 18,000 tons a year. It is now announced, says the London *Ironmonger*, that the plant has just completed its first important order, and that another tin mill is about to be erected. In 1914 Norway took 29,000 tons of tin plates from Great Britain.

Germany's Low Bids on Structural Steel for South America

WASHINGTON, Aug. 23.—German steel mills will be unable to make deliveries of a great part of the business they have taken recently in South America in competition with American and British firms, according to importers in that country. A report received by the Bureau of Foreign and Domestic Commerce from Edward F. Feely, commercial attaché at Buenos Aires, says that the view of the importers, who represent American and British manufacturers, was expressed in connection with the award given in June to Pedro Goedhart, representing a German firm, for 750 tons of fabricated bridge steel for the Argentine government. The German bids were much lower than the American and British tenders, one of the latter carrying the highest figure. The bid of Goedhart was 309,570 pesos Argentine paper currency, c.i.f. Buenos Aires, or less than one-half of the lowest American bid, 648,868 pesos, even if the latter currency is figured at the normal rate of exchange. The highest British bid was 670,000 pesos, made by Percy Grant. Another importer of British steel, Cia. Britannica de Construcciones de Acero, bid 496,264 pesos. The two lowest bids were both made by importers representing German mills. In addition to the one mentioned, there was the bid of Staudt y Cia (Krupp), 312,264 pesos.

The State of Pennsylvania suffered a loss of $25,413,305.73 in wages alone from strikes during the first six months of 1921, according to a report submitted to State Commissioner of Labor and Industry Clifford B. Connelley by William J. Tracy, chief of the bureau of mediation and arbitration. A total of 4,186,031 working days were lost in 323 strikes in the six months' period. In the metal industries, alone, the loss is estimated at 669,015 days, with a wage loss of $4,673,736.

Strike benefits amounting to $391,985 have been paid from Oct. 1, 1920, to June 30, 1921, by the International Union of Boilermakers and Iron Shipbuilders, it was announced in St. Louis by Joseph P. Ryan, international vice-president, who is there directing the strike of local No. 27. There are 400 men in St. Louis that are out on strike. Ryan said that boilermakers are on strike in about forty cities in this country.

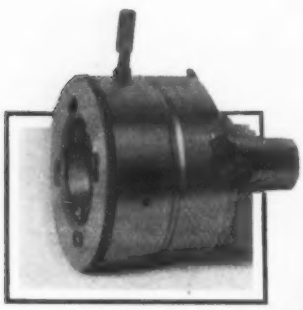
The open hearth department of the National Malleable Castings Co., Sharon, Pa., is working five days a week, starting Aug. 15, instead of three days as before. No additional men will be employed, but those who were retained when the three-day-a-week schedule was started will be given an increase in working hours. The company expects to increase production in other departments within a short time.

Special Diehead for Fine Threads

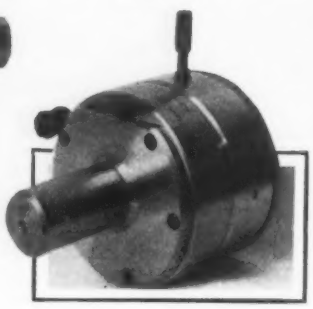
The diehead shown in the accompanying illustrations has been developed recently by Alfred Herbert, Ltd., 50 Church Street, New York, and is being offered as an addition to the line of Coventry diehcads handled by that company.

It is for fine threads of comparatively large diameter but of no great length. The company's standard diehead is of a size and weight in excess of what is required for cutting a fine thread, being made strong enough to cut Whitworth threads of the full nominal diameter of the diehead, which threads are comparatively coarse in pitch. To meet the demand for a smaller and less costly diehead the 2½ in. fine thread diehead under consideration was developed. The range of sizes cut is from 1¾ in. to 2½ in.

The diameter of the body of the diehead is 5⅝ in.; the total length, 7¼ in., and the weight, with one set



The Shank Is Attached to the Diehead by a Large Flange. For threads longer than 2½ in., the shank is removed and an adaptor fitted



The Holder Consists of a Base Bolted to the Capstan Face and a Sliding Portion, Which Carries the Diehead. The slide is elevated by a handle

of dies, is approximately 23 lb. The diameter of the shank is 1¾ in. The weight of a set of dies would be about 8 oz. against 5½ lb. for the dies of a 3 in. diehead. Being smaller and lighter and having a smaller shank than the 3-in. diehead it can be used in the turrets of the smaller lathes which would be used for cutting the fine threads.

The shank is attached to the back of the diehead by a large flange. In cases where threads longer than 2½ in. are required, the shank can be removed and an adaptor fitted to suit the particular turret face on which the diehead is to be used, the adaptor having a hole large enough to accommodate the maximum screw to be cut. The length of the thread is then not limited by the diehead but only by the holes in the turret of the lathe. The shank is 1¾ in. x 3 in. long and, being solid, permits of a reduction in diameter to suit holes less than 1¾ in. The holder consists of a base which is bolted to the capstan face and a sliding portion which carries the diehead. The slide is elevated by a handle with an eccentric at the end of the shaft which engages the slot in a hardened steel bush driven into the base. The reverse movement of the handle lowers the diehead into the cutting position. An external deadstop locates the diehead in line with the spindle. Taper threading and rotating attachments can be supplied. The coarsest pitch which can be cut is 11 per in., or 2.25 min. pitch.

The diehead is said to have met with a ready reception in the brass industry where fine threads are to be met on an extended scale.

The Associated Building Employers of Jackson, Mich., which has declared for the American or open shop plan of employment, has perfected an organization and opened offices at 111 East Main Street, Jackson: A. N. Case, Case Mfg. Co., sheet metal contractors and metal stamping, is president; Clyde Elwood, Watts-Morehouse Co., builders' supplies, is treasurer, and Lewis Atherton is executive secretary. The association is a unit of the Associated Building Employers of Michigan.

Present World Stocks of Zinc

World stocks of virgin zinc, according to the well-informed European correspondent of the American Zinc Institute, are at present about as follows by countries in tons:

United States	80,000
United Kingdom	20,000
Belgium	11,000
Germany	16,000
France	5,500
Scandinavia	4,500
Other countries	8,000
Total	145,000

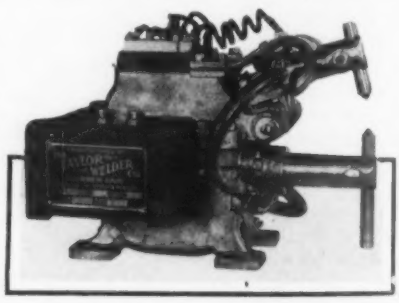
Bearing in mind that the world's consumption was almost 1,000,000 tons per year before the war, these stocks as unsold are low and would be quickly absorbed by a sudden trade revival.

Improved Condition of Standard Parts Co. Affairs

What is mentioned as a sign of recovery for the automotive and allied industries was contained in the decision rendered by Federal Judge D. C. Westenhaver of the Northern Ohio District Court in Cleveland, Aug. 15, answering the petition of Frank A. Scott, receiver for the Standard Parts Co. The court granted permission for a payment of a 10 per cent dividend to creditors and stated that he was satisfied the company was being operated by the receiver in a sound and economical manner. The petition set forth that the company held a cash balance in excess of $1,500,000. A consolidated balance sheet, submitted with the petition, showed the condition of the Standard Parts Co. to be improved.

New Bench Type Spot Welder

A new spot welder of the bench type, designated as the S-4-B, has been placed on the market by the Taylor Welder Co., Warren, Ohio. It is designed for light work such as spot welding light gages of sheet metal; cross-wire welding; contact points of platinum or tungsten to steel; brazing and soldering small parts of electrical instruments, watch cases, optical goods and the welding of gold to German silver or steel; and also



The Cast Copper Frame Acts as a Secondary. The lower horn can be adjusted to three different positions, three sets of holes being drilled in the base of the frame and the horn set to suit the work

small laboratory work. In capacity the range is two pieces of No. 30 to No. 16 gage sheet steel.

The floor space occupied is 10 in. x 17 in., the extreme height from the bench being 12 in. and the distance from bench to the welding dies, 6¾ in. The overhang is 4 in. and greatest movement of the upper electrode, 1 in. the distance between the horns when closed being 3 in. in the upper position and 5 in. in the lower position. The weight is approximately 150 lb.

The machine has a cast copper frame which acts as secondary, tending also to make it more efficient. The horns are of cold drawn copper 1¾ in. in diameter. The lower horn can be adjusted to three different positions, being made adjustable by drilling three sets of holes in the base of the frame and setting the horn to suit the work, a long electrode being furnished below to suit this condition. The electrical features include a 3 kw. transformer with a 4-step regulator for adjusting the current and an automatic single-pole switch. Water circulates in the upper and the lower horn. The machine is foot operated.

The Moline Plow Co., Moline, Ill., announces a new price of $990 on Model D tractors, this being a reduction of $320 under the price of Jan. 1. The new price is the lowest at which the tractor has ever been sold.

Secure Place of the Iron Blast Furnace

Features of Superiority Not Met by Processes Aiming at Producing Steel Direct from Ore — Several Possibilities of Improvements

BY JOSEPH F. SHADGEN*

OF late the reduction process on which the blast furnace is based has been by inference subject to doubt, and various efforts have been made in different countries to discredit, at least indirectly, the functions of this venerable apparatus as well as its commercial usefulness. Direct methods of producing steel immediately from the ore are invented every year. They stir up a froth of opinions and controversies that generate sometimes extensive trial installations, but they have, up to the present time, upset very little of the universally recognized strong position of the blast furnace in its yielding an intermediate product termed pig iron, so impure that another operation is required to transform it into steel, the most useful commercial form of iron. That the blast furnace offers only a roundabout solution of the ore reducing problem is obvious and the following study purposes to present in a concise way the whys and hows of the process involved. It is neither an attack nor a refutation, but is merely intended as an objective exposition of the writer's personal point of view, the result of theoretical studies and practical observations.

In reviewing the problems involved, it must not be forgotten that the direct process of reducing iron ore to steel existed before the blast furnace, because the Catalan ovens and fires producing steel from ore antedate even historic records. The blast furnace is the result of a slow evolution and was born over a century ago through the efforts of the artisan to increase the production. After a century of a haphazard slow development, it came into prominence about 75 years ago through the invention and application of the steam blowing engine to replace the old style bellows or hydraulic devices. Refinements of the process never ceased. Hot blast was adopted after 1860 and Cowper stoves in their numerous forms have been standard fixtures since 1880. After 1900 the utilization of the waste gases set in vigorously and to-day is in the last stages of its development. Hence it appears that the blast furnace is not an invention but the growing child of the practical operator, who never ceased to have faith in its superior commercial value.

Very little of theoretical consideration was responsible for its conception. Bessemer and Thomas, as well as Siemens and the Martin brothers, accepted the correct principle and efficiency of the blast furnace process philosophically and concentrated their minds on the methods of refining economically the pig iron into the final steel by means of either the converter or the open-hearth furnace. Theoretical investigations of the very complex process were undertaken only after the universal adoption of the process by industry, as the classical work of Professor Gruner of Paris attests, and only since 1900 have scientific tests been made on a large scale to secure real data for heat-balance sheets and to study the detail factors.

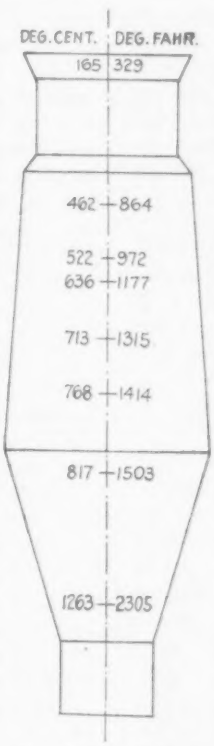


Fig. 1—Blast Furnace Temperature Records as Published by N. Metz

Early records show that the small blast furnaces used charcoal, and this fuel has survived in this country and also in Sweden, where its price is reasonably low. Economic reasons, cost and supply considerations, forced a switch to the mineral fuels available in larger quantities and anthracite proved to be the best suited natural coal giving good results in the blast furnaces. High volatile coals proved unsatisfactory on account of the complication of the coking phenomena introduced within the shaft of the furnace. The scarcity of anthracite coal led to previous carbonization of the ordinary bituminous coals to transform them into coke by distilling the gases that had proved objectionable in the blast furnace. Coke became the standard fuel not only because practically all its carbon is uncombined and its sulphur content is less than that of the original coal, but because its qualities could easily be controllable beforehand. Coke furthermore is hard and of a very porous texture, properties that are of the greatest value in the process of the blast furnace. Free carbon proved to be the best reducing agent in the blast furnace for reasons unknown for quite some time, but the results of the practical experience more than convinced the operator of this vital condition.

Features of the process are: The so-called impure carbon-iron alloy called pig iron melts at a relatively low temperature, and melts without getting pasty or without any intermediate transformations. The melting points of the various grades of pig iron lie between 1100 and 1300 deg. C. (2000-2350 deg. Fahr.), which permit operating with bosh and hearth temperatures of 1200 to 1400 deg. C. (2200-2550 deg. Fahr.), as slightly superheated conditions have to prevail to guarantee permanent fluidity and continuity of running. The relative ease of producing slags (aluminosilicates of calcium and magnesium) melting at those temperatures, the possibility of shading the composition of those slags to conform with the analysis of the various qualities of pig iron wanted by the trade are outstanding reasons for the success of the blast furnace process. As all temperatures below 1400 deg. C. (2550 deg. Fahr.) assure a reasonably long life of the refractories, it will be clear why the blast furnace is the accepted medium for reducing iron ores. The last but not least advantage of the blast furnace is that "all" the iron content of the ores is reduced to metallic iron and that the loss of metal through incomplete reduction (in other words, the iron content of the slag) is very low. In spite of the large volumes of the slags produced, four to ten times greater than the volume of pig iron, this loss seldom exceeds 3 per cent of the iron produced and should never be greater than 5 per cent. The iron loss through the dust contained in the blast furnace gases can be recovered practically in its totality in a modern plant.

All direct methods reducing ores immediately to steel must not only create slags fluid at temperatures

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around 1500 to 1600 deg. C. (2700 to 2900 deg. Fahr.), and consequently provide refractories to withstand those temperatures and the mechanical actions and chemical reactions at those extreme heats, but they must also avoid that the iron oxides enter the slag, unreduced, because this loss is unrecoverable, and hence may compromise the economic results of the whole operation. All operators of open-hearth furnaces are well aware of the difficulties of keeping the iron content of their high temperature slags very low. In spite of the small volume of slag in comparison with the volume of the metal inherent to the refining process, all means are used to cut down this loss to a minimum.

Another factor not to be lost sight of is the enormous capacities made possible by the blast furnace within a very limited space without handicapping the natural balance of its reactions or reducing the economical run of operations. The recognition of these facts led to enormous daily production (500 tons, sometimes more), unknown in any other industrial process involving chemical changes. This concentration of operations in large units helped considerably the economic developments, because it permitted the reduction of conversion costs through large well equipped mechanical installations that are the earmarks of the modern blast furnace plant.

Influence of Solid Carbon of Fuel as Reducing Agent

The blast furnace mixes fuel and flux intimately and creates by the counterflow of the rising gases an equilibrium of reactions as well as temperatures at each level that is difficult to excel by any other apparatus. The movement of the materials downward is vertical, producing least friction and a minimum of abrasion on the walls of the furnace and thus assuring long life of the brick linings. The vertical upward movement of the gases tends to make use of the whole section offered and does not favor any part against another part. This counterflow utilizes the heat to a remarkable degree and stratifies the various reactions that require different temperature levels, such as dehydration, calcination of limestone, reduction of oxides, melting of flux. The remarkable way the temperatures vary is reflected by the results of tests of N. Metz, made in 1910 in Dudelange (Luxemburg) on a minette furnace. See Fig. 1.

The latest research seems to attribute the surprising reduction qualities of the blast furnace process to the action of the solid carbon. The theory confirmed what had been recognized by practical experience as reflected by the constant endeavors to provide a fuel with a maximum amount of free, uncombined carbon. Without going into lengthy theoretical calculations, this point can be made clear by pointing out that the reducing influence of the gases (CO in particular) is practically negligible. First, because their time of contact in the high temperature zone is very small—a fraction of a second—as the gases pass through any blast furnace from tuyere to top in less than 3 to 5 sec. Second, because this high velocity does not permit intimacy of mixture and contact necessary for the reducing action. And, third, because the reaction velocities of CO acting as the reducing agent are relatively small.

Most of the reduction of iron oxide or the ores to the uncombined metal of the pig iron is the work of the downgoing carbon of the coke. The porous texture permits intimate mixtures and offers large contact surfaces. The periods of contact are very long, several hours at least. The coexistence of these conditions explains the superiority of the blast furnace process. Part of this solid carbon that pervades the whole pasty mass in the lower bosh is absorbed by the freshly reduced iron particles to form the alloy called pig iron that absorbs additional impurities of the flux (Si, P, S and Mn).

This analysis and these considerations bear out, first, that all new processes based on the reducing activities of gases have to be taken with a grain of salt and, second, that laboratory tests are in no way conclusive, as the time factor is completely ignored in small installations producing several tons a day, whereas in large plants with hundreds of tons of daily capacity the time of contact is much shorter, a detail feature that has to be discounted correctly. The fact of the paramount influence and value of the solid carbon as a reducing agent is also borne out by the evolution of the electric blast furnaces, wherein electricity generates only the heat required to attain the temperatures necessary for the reactions and the melting phenomena, while mixtures of coke with charcoal, or charcoal alone, provide the reducing agents for the iron oxides of the flux.

Heat Balance of Blast Furnace

Fig. 2 represents the rough diagram of the heat balance of a blast furnace. The calculations and assumptions conform to a practical case, and for general discussion, the data of Table 1 may be accepted. It must be said in parenthesis that real balance sheets are much more complicated and require very elaborate preliminary explanations and real information data, but for the purpose of this study the tabulated approximations will prove sufficient.

The hot blast contributes more than heat and the savings are proportionately greater than the immediate addition of a number of British thermal units. The increase in temperatures around the hearth level caused by the hot air creates more appreciable results than merely adding heat. This plus the flywheel effect and easy control explains why stove efficiency and blast temperatures are or should be in the foreground of the attention of the practical furnace man to-day.

The heat loss through the slag varies with the flux, which is a function of the ore. The heat lost by the molten slag is proportionate to the amount of slag and is practically unrecoverable. No practical means of reclaiming that waste exists to-day in spite of efforts toward a solution in England.

The melting of the pig iron accounts for about 4 per cent of the heat supplied by the coke. In steel plants adjoining blast furnaces this sensible heat is utilized to a large extent, as the pig iron is refined into steel immediately.

Table I—Items Entering into the Heat Balance of a Blast Furnace

Providing B.t.u.		Absorbing B.t.u.	
(*a*) Heat content of coke, %	100	(*a*) Liquid iron, %	3.5 to 5
		(*b*) Liquid slags, %	4 to 10
		(*c*) Radiation and cooling, %	8 to 12
(*b*) Heat added by hot blast, %	8 to 15	(*d*) Reactions, %	25 to 32
		(*e*) Blast furnace gas, %	55 to 65

Radiation and cooling losses are mainly dependent on the rate of operation; their value is considerably less in large furnaces blowing large tonnages than with the small units pushed to less degree.

The heat required for the complex reactions is made up of the heat required for evaporating the water of the flux and the coke, the calcining of the limestone and the reduction of the ores and varies considerably. Numerous detail data have to be guessed at or, to put it politely, have to be carefully estimated.

The most remarkable characteristic of the blast furnace process is the fact that, speaking roughly, 55 to 65 per cent of the theoretical heat content of the coke escapes from the top of the apparatus in gaseous form. In the early days of the art, with the open top, these gases were considered a great nuisance, but soon their value as a by-product was recognized, especially for

heating the brick work of the stoves that raise the temperature of the blast. Crude attempts were made to separate the dust that soiled them. The advent of the gas engine and the continuous upward movement of coke prices changed the old point of view, and to-day the gases are no longer a by-product but one of the main products.

The correct utilization of their energy permits of reducing the conversion cost of ore to pig iron to a remarkable extent. Speaking generally, for each ton of pig iron the blast furnace yields an average of 155,000 cu. ft. of gas, representing at 130 B.t.u. per cu. ft. some 20,000,000 B.t.u., equivalent to the heat value of 1400 lb. of real coal of about 14,000 B.t.u. per lb. This simple calculation visualizes the asset those furnace gases represent and makes all further comment of their value superfluous.

To make an efficient use of the calorific value of the blast furnace gases a thorough cleaning is necessary. The last twenty years of furnace experience are a proof of that statement and yet not all operators accept its obvious logic. It is not only cheaper to clean all the gases, but it is cheaper to cleanse them thoroughly before releasing their heat energy. The costs of purification will be more than regained by subsequent advantages. Efficient solutions of the cleaning problem are on the market, based either on the dry filter principle or on water injection with centrifugal separation or scrubbers, or the electrical precipitation phenomena.

That no gas should escape and all joints be tight to prevent every wanton loss is a precaution so evident that it hardly needs any repetition. A loss of over 3 to 5 per cent during work days may be accepted as inevitable, but figures in excess of that are to be considered as representing wasteful operation.

The first use of the gas is the heating of the Cowper stoves. With clean gas and modern burners, 25 per cent of the total gases, or some 5,000,000 B.t.u. per ton of pig iron, should suffice for this purpose, although 30 to 33 per cent (7,000,000 B.t.u.) are more common in every day experience to-day. Here is room for considerable saving, and it is astonishing to note the absence of interest in this problem and to record the indifference toward improvements in this detail by the majority of operators.

The second immediate utilization of the blast furnace gases is the generation of power to operate the furnace itself. The principal auxiliaries are the blowing engines, the hoist, the pumps and the gas cleaning plant, all of which operate practically continuously; of secondary importance is current for intermittent uses, such as lighting and shop work. The total power requirements per ton of pig iron will probably average some 130 to 150 kw., of which the blowing station takes the lion's part of 90 to 110 kw. The generation of this power leads broadcast into the controversy of gas versus steam prime movers, a question which cannot be dealt with squarely in a summary like this one. The surprising popularity of the gas engine in Europe is nevertheless worth mentioning, and for general information it may be added that 15,500 to 16,500 B.t.u. are generally figured as necessary to generate a kilowatt on the bus-bars of the powerhouse, an average confirmed by practical experience, over years of operation, with due allowance for the low load factor of the central power plant in the iron and steel industry in not operating on Sundays. For gas blowing engines here in America a minimum of 100,000 B.t.u. per 1000 cu. ft. of blast air may be accepted (although lower figures have been reached with lower pressures in Europe) and used as a comparison to check up the actual efficiency of an existing equipment.

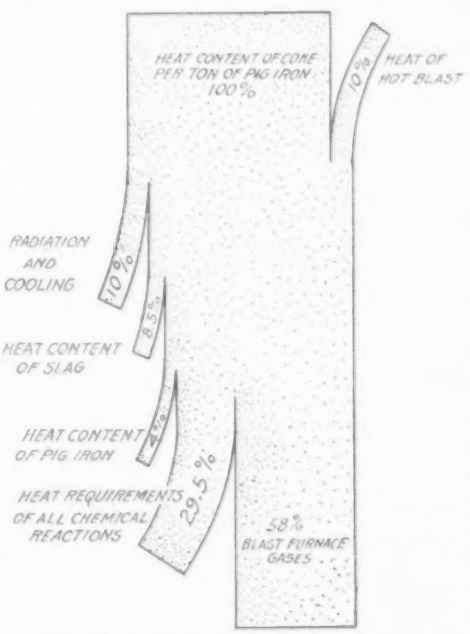


Fig. 2—Approximate Diagram of Heat Balance of Blast Furnace

About 40 to 55 per cent of the blast furnace gases are surplus available for other purposes and represent a value that no practical operator should miss taking advantage of. The statement, heard so often: "We have no use for the surplus," cannot be taken seriously, as no industry can afford to disregard an asset and to throw dollars away.

This essay will have proved that there is nothing basically wrong with the process of the blast furnace. The historical evolution has found a theoretical confirmation that explains the superiority of the method of reducing iron ores into pig iron over any other method. The efficient utilization of the blast furnace gases is emphasized and several possibilities of improvement are hinted at; these will not fail to be drawn into the limelight in the coming years of competition and low margin profits.

Coal and Coke Labor Reductions

UNIONTOWN, PA., Aug. 20.—Preceding by 24 hours the announcement of the United States Steel Corporation of a further reduction in wages, W. J. Rainey, Inc., published reductions of 3 to 15 per cent in mine and coke plant labor, carrying the Rainey scale back to the old Frick scale of May 1, 1917. Employees of the Mt. Braddock and Allison plants of the Rainey company declined to accept the reduction and quit work, closing down two of the largest plants of the company in the region. No disorder marked the suspension of operations. Men say they will not accept the new scale; officials say the plants cannot be operated at a higher scale.

The Rainey reduction, effective on Aug. 19, is the fourth this year and cuts total approximately 50 per cent. Other reductions were put into effect without question and were followed by all other independents in the region. So far as can be learned to-day, no other independent operations contemplate further reductions. The present scale of the independents is 10 per cent lower than the present Frick scale. No information is available as to the new scale of the Frick company which is to become effective on Aug. 29, in line with the Steel Corporation's announcement on Aug. 19 in New York.

Rainey operations, until the Mt. Braddock and Allison were suspended, was approximately 85 per cent coal and 30 per cent coke. All Frick ovens continue out of blast. Coal production of the company in the region is now approximately 35 per cent. Most observers believe that the new wage scale will be the signal for resumption on a large scale, many predicting that the region will be operating generally at 60 per cent by the middle of September and at near normal by early spring, "near normal" being approximately 90 per cent of regional production. It is wise to emphasize, however, that coke production probably never will reach the "war basis" of operations, due to the growth of the by-product ovens in place of the beehive type.

Steel Industry Heard on Tariff Schedules

Ferroalloy Paragraph Chiefly the Issue —Magnesite and Graphite Duties Opposed and Defended in Late Hearings

WASHINGTON, Aug. 23.—The interest of the iron and steel and allied industries in the metal schedule of the permanent tariff bill is evident from the number of important witnesses who are scheduled to appear this week before the Senate Committee on Finance. The hearings on this schedule were begun to-day with discussion relating to aluminum, anvils, files, cutlery, surgical instruments and other products but it is a question how far the committee can carry out its program, because it has been delayed in closing hearings on the chemical and earthenware schedules.

The committee plans to complete the metal schedule this week, after which it expects temporarily to discontinue hearings in order to take up the tax bill. On Thursday the major items in the metal schedule are to be taken up, according to the present program, and some of the leaders in the industry are listed to appear. They include Chairman John A. Topping, Republic Iron & Steel Co., who will speak on the ferroalloy section, an object of much discussion, also on tin; E. G. Grace, president Bethlehem Steel Co., ferroalloys; A. C. Dinkey, president Midvale Steel & Ordnance Co., ferroalloys; J. A. Campbell, president Youngstown Sheet & Tube Co., welded pipe and barbed wire; Willis L. King, vice-president Jones & Laughlin Steel Co., ingots, slabs and billets and structural steel; Severn P. Ker, president Sharon Steel Hoop Co., hoops, bands and cotton ties; I. M. Scott, Wheeling Steel Corporation, sheets and tin plate; Alan Wood Iron & Steel Co., pig iron and scrap; W. M. Slater, Washington, American Rutile Co., ferroalloys; Henry L. Smith, Indianapolis, manganese ore; De Courey Brown, New York, ferroalloys; Dan Sutherland, Washington, American Brass & Copper Statistical Exchange, chrome ore; Clifton Taylor, Pittsburgh, Molybdenum Corporation of America, ferroalloys; Radcliffe Romeyn, Philadelphia, ferroalloys; W. H. Abbott, Wheeling Steel Corporation, metal schedule; Thomas E. Monks, Cleveland, ferrosilicon.

Hearings last week on the chemical and earthenware schedule included testimony regarding magnesite, graphite and fluorspar. On the first two witnesses appeared both to oppose and support duties, while on fluorspar one witness appeared and asked that the duty of $5 proposed in the Fordney bill be increased to $10 net ton. The steel industry itself did not have any representative before the committee, but its position is that fluorspar should be continued on the free list.

Treasury experts have begun the work of studying the American valuation plan, which the Senate Finance Committee, in joint conference with the House Committee on Ways and Means, has concluded to adopt. The experts will endeavor to learn as nearly as possible how the new plan of assessing ad valorem duties will operate as applied to American products and report to the Senate committee. The latter will use the information in determining rates in the permanent bill and it has been indicated strongly that this will result in a general lowering of the duties carried in the measure as it passed the House.

Argument Against Proposed Duty on Magnesite

Claiming that the four Pennsylvania plants engaged in the manufacture of magnesite brick and the plant of the American Refractories Co. at Baltimore, representing an investment of approximately $2,500,000, would have to be abandoned within one year after the levying of the proposed duty of ¾c. per lb. on dead burned magnesite carried in the Fordney tariff bill, P. B. Mossman of the American Refractories Co., Pittsburgh, urged the committee to continue crude and dead burned magnesite on the free list. Mr. Mossman, after approving the present duty of 10 per cent ad valorem on manufactured magnesite brick, made a vigorous attack on the Fordney rates on magnesite. He recited the growth of production in the United States, saying that domestic output was less than 10,000 tons prior to 1914; that large quantities were imported into the United States from Austria and Greece, 90 per cent coming from the former country because of the superior character of the material.

Domestic Production and Prices

Stimulation of domestic production following the outbreak of the European war, when importations from Austria were cut off, was noticeable, references being made to operations in California and Washington. It was contended by Mr. Mossman that there is not one magnesite deposit in California that has sufficient tonnage of quality to justify the erection of a plant at the deposits for the production of synthetic and dead burned magnesite. It was also asserted that at the rate of production for the year 1920, magnesite deposits in Stevens County, Washington, would be exhausted within 10 years and that meanwhile users of magnesite in this country would be carrying a heavy tax burden, and millions of dollars invested by rivals of the Northwest company would be in idle plants.

Before the war dead burned magnesite sold at $15.75 per ton at American Atlantic seaboard and consequently the tax proposed, equivalent to $15 per ton, is practically 100 per cent. Asserting that the United States Tariff Commission estimates the total consumption of magnesite in this country at about 300,000 tons crude, which would equal about 150,000 tons of calcined or dead burned, Mr. Mossman said that the total annual tax upon the producers of steel, copper and other materials in the production of which magnesite is used would amount to $2,250,000, a sum to be annually increased with the normal increase of production in the United States.

He combatted what he said was the assumption of domestic producers that the chief point of destination of magnesite grain was the Atlantic seaboard, freight rates being figured accordingly. It was explained that about 50 per cent of the magnesite grain is shipped to the brick plants to be manufactured into magnesite brick and the remaining 50 per cent is shipped in grain form directly to the steel or copper plants, where it is used in making bottoms for the furnaces in which the metals are treated. The brick plants are at present located, he said, in Pennsylvania and Baltimore.

The Center of Magnesite Consumption

With the development of the industry in Washington, under free and competitive conditions, it was maintained by Mr. Mossman that it is inevitable that similar plants will be erected either by the producing company or by others, in such close proximity to the deposits of raw material as to have the benefit of the resulting low freight rates. He maintained that it is a well-known fact that the center of steel production in the United States is in the neighborhood of the Indiana and Ohio State line and that in view of the fact that there is very large consumption of magnesite used in the copper smelting industry in the Rocky Mountain States, it is fair to assume that the center of consumption of magnesite grain is west of the center of steel production.

It was asserted that 30½ per cent of the total ship-

ments of the American Refractories Co., during the years 1916-17-18, went to destinations north, west and south of the Mississippi River, 26 per cent going to points in the United States west of the Mississippi. It was argued, therefore, in determining the comparative cost of the foreign and domestic material, that the Atlantic seaboard cannot be taken, in estimating freight tariffs, as the average point of destination. He gave figures to show that the actual cost of all the magnesite marketed by the American Refractories Co. from its Austrian plant during the year 1920, amounting to 17,217 metric tons, delivered at Baltimore, was $33.05, while the total cost per net ton of 2000 lb. on vessel at United States Atlantic seaboard ports was given as $30.05. He also submitted a statement making a comparison between domestic and imported magnesite delivered at various destinations. It emphasized again the fact that the average destination is not the Atlantic seaboard but some point west of the Indiana-Ohio State line, it being claimed that the Austrian cost did not include any profit to the Austrian operation.

Competitive Prices East and West

The cost of magnesite produced at Chewelah, delivered in the Pittsburgh-Cleveland district, was given as $40.04, while the import cost was given as $36.05, the latter having the advantage of $3.99. The cost of the Chewelah product delivered in the Chicago-St. Louis district was given as $38.29, while the import cost was estimated at $40.05, the domestic advantage in this instance being $1.76. In the Montana copper district the domestic advantage was put at $20.17.

Mr. Mossman opposed the idea that domestic deposits should be developed as a matter of national preparedness, contending that the best thing that could happen to further the cause of preparedness would be to close down the domestic magnesite industry completely in order to conserve the supply for emergency needs.

"The American Refractories Co.," it was stated, "has a far greater investment of capital than exists in the entire magnesite producing industry in the United States. This investment was made at a time when the copper and steel producers of the United States were wholly dependent for their supplies of magnesite upon European sources.

"The property of the American Refractories Co. acquired in Austria now represents a cash investment of over $2,000,000, and it has produced and sold to American manufacturers magnesite which is recognized to be of the highest known quality."

Request was made by Attorney Reeves T. Strickland, Washington, representing the Magnesite Mining & Mfg. Co., that magnesite be placed on the free list. The company he represents has mines on the coast of Venezuela and it was stated that importations would be seriously interfered with by the duties proposed in the Fordney bill. It was asserted that imports at the Atlantic seaboard would not interfere with the magnesite industry on the western coast of the United States.

For and Against the Graphite Tariff

In his argument before the committee for the continuation of graphite on the free list, H. M. Riddle of the Asbury Graphite Mills, Asbury, N. J., stated that a serious condition confronts not only the manufacturer and refiner of foreign crystalline graphite, but all users of this material, including nearly 4000 foundries in the United States and large crucible interests. There never has been a duty on crystalline graphite because it is impossible to get along without this product. It was explained that there is something about the texture of Ceylon graphite that the American graphite does not contain. Aside from that, it was pointed out that there is only about 2 per cent of graphite in the American rock, while the Ceylon product is from 60 to 98 per cent pure. Mr. Riddle told of the difficulty of using American and Canadian graphite during the war, when shipments from Ceylon were cut off. Their use was made possible by mixing these grades with the Ceylon product which was on hand. Not only did Mr. Riddle complain of the high prices of the domestic product, but he claimed that there is nothing that will satisfactorily take the place of Ceylon graphite.

Restoration to Free List Urged

Speaking for graphite dealers and manufacturers, Attorney Charles E. Kern of Washington urged the committee to restore this product to the free list. He said that no matter how high the tariff may be it cannot force crucible makers to use an unfit raw material. He added: "Increased cost of crucibles will work to the disadvantage of manufacturers who have small capital. The electric furnace and the crucible have been going nip and tuck in matters of cost efficiency but if expense is added to the crucible by a tariff tax which does not apply to electric furnaces there will be a positive advantage for manufacturers of large capital because they can change to the electric furnace. Men operating on a small scale will continue of necessity to use the crucible if they remain in the business.

"Our graphite trade with Ceylon is now giving return cargoes to American ships that carry our products to the Orient. It has been suggested that we should develop our graphite deposits as a preparation for war, but until someone can make a satisfactory crucible of this graphite it cannot serve in war time. Necessity caused the most thorough tests of this material in crucible making during the recent war and proved that it was unfit for that purpose, beyond a small mixture along with the binding clay.

"We trust the crucible industry will be permitted to continue with the conditions under which it was built up."

George H. Pettinos of Philadelphia manufacturer of crude graphite, using domestic and foreign material, and owner of deposits in Chester County, Pennsylvania, asked that graphite be kept on the free list. He said there is no substitute for Ceylon graphite, except up to 10 per cent, and that the crucible industry, now on a par with the electric furnace as to cost and quality, will be wiped out if it is handicapped by the proposed duty on graphite. He gave it as his opinion that eventually the electric furnace will entirely replace the crucible industry but protested against hastening such a condition. Replying to a question by Senator Simmons, the witness said he did not seek or desire protection on his manufactured products.

Lower Melting Cost with American Crucibles

The other side of the story on graphite was told by George A. Sharpe of Birmingham, Ala., representing the Alabama graphite producers, who asked for protection ranging from 1c. per lb. on crude graphite to 6c. per lb. on the finished product. He asserted that domestic graphite will make a good crucible of itself and even a better crucible than that made from Ceylon graphite and pointed out that the Electro Refractories Corporation of Buffalo is getting 85 heats from domestic flake graphite. He argued that a duty of 6c. per lb. on American flake graphite would reduce instead of increase the cost to consumers by more than one-half. With this in mind he said that a No. 70 crucible contains approximately 17 lb. of graphite, which at a duty of 6c. would be $1.02. Made of Ceylon graphite, it was stated, this crucible will take not more than 30 heats. The crucibles from American flake (each charge weighing about 90 lb.), it was stated, will melt 7650 lb. of metal. Melted in a Ceylon crucible, the total would be 2700 lb.

"A No. 70 crucible, we will say," added Mr. Sharpe, "sells for 7c. a number, and this means a No. 70 crucible would be sold for $4.90. Add to this the full 6c. per lb. which we are asking on flake, or $1.02, and you have a cost of $5.92 for the American crucible. The Ceylon crucible, melting 2700 lb. of metal, at a cost of $4.90, means a cost of 0.18c. per lb. of metal melted. The American flake crucible, melting 7650 lb. of metal at a cost of $5.92, represents a cost of 0.08c.

per lb. of metal melted, or less than one-half the cost of melting in the Ceylon crucible."

Asks $10 Per Ton on Fluorspar

A duty of $10 a ton on fluorspar was asked by A. A. Northern, Hopkinsville, Ky., representing the Potters' Union. The duty carried in the Fordney bill is $5 a net ton, with a provision that after the expiration of one year beginning on the day following the passage of the act, the duty shall be $4 a net ton. Mr. Northern contended that production costs in England are much lower than they are in the United States and said this open-hearth flux was coming in from England and selling at $10 a ton, while the average domestic price is $20 a net ton f.o.b. mines. It was brought out, however, that imports have been extremely small during the past few years when compared with domestic production and consumption.

Transfer of zinc oxide from the metal to the chemical schedule was suggested by Stephen S. Tuthill of the American Zinc Institute. He also asked that products of lead and zinc ores be placed at higher duties than the ores themselves, pointing out that zinc oxide and white lead are competitive.

Fall Meeting of Mining Engineers

Plans are rapidly maturing for the fall meeting of the American Institute of Mining and Metallurgical Engineers at Wilkes-Barre, Pa., Sept. 12 to 16. Besides the usual sessions on coal and general mining problems, there will be a meeting of the metal section at 8 p. m. on Monday, Sept. 12, for which the following papers are scheduled:

"Application in Rolling of Effects of Carbon, Phosphorus and Manganese on Mechanical Properties of Steel," by W. R. Webster.

"Thacher Process for Molding and Casting Propeller Blades and Wheels," by E. Touceda.

"Making a 5 Per Cent Nickel Cast Iron Alloy in an Electric Furnace," by D. N. Witman.

A paper on the "Application of Pulverized Coal to Boilers" will be presented Tuesday evening, Sept. 13, by J. M. Fuller.

Fall Meeting of Electrochemists

Present indications point to a high-grade program for the technical sessions of the fall meeting of the American Electrochemical Society at Lake Placid, N. Y., Sept. 29, 30 and Oct. 1. The features are to be symposiums on non-ferrous metallurgy and on electrodeposition. On Thursday evening, Sept. 29, Prof. Harlow Shapley of Harvard University will lecture on "Chemistry and the Stars." An elaborate program of sports is being arranged.

For the spring meeting in 1922 three symposiums are announced: Electric furnace cast iron, gases of the electrochemical industries and electromotive chemistry.

The Gibson, Ind., repair shops of the Indiana Harbor Belt R. R. have been leased by the United Boiler Heating & Foundry Co., Hammond, Ind., which opened the shops on Aug. 15, with a force of 150 men. Charles Nau, president of the company, was formerly general foreman of the Gibson shops and hopes to be able to handle the repair work not only of the Indiana Harbor Belt but of other roads.

A merger has been effected between the Stowell Co., South Milwaukee, and the Pelton Steel Co., Milwaukee, whereby the Stowell Co. secures the business of the Pelton company. It is the intention to continue operating the Pelton plant under the old name and to maintain the same organization. The Stowell Co. has had steel casting facilities for some time, but now counts on added capacity and scope of quality.

Industrial Plant Activities

The tinners tool department, Peck, Stow & Wilcox Co., Southington, Conn., is on a 5½-day schedule, as against a 5-day heretofore.

The Remington-Arms Union Metallic Cartridge Co., Bridgeport, Conn., employing 2700, last week began operations under a new wage scale involving a reduction of 10 per cent.

The Warren Steam Pump Co., Warren, Mass., heretofore operating its plant with reduced help on a 40-hr. week schedule, has closed.

The Sessions Clock Co., Forestville, Conn., last week somewhat reduced working forces and lowered wages 10 per cent. The automatic machine and casting departments closed for two weeks.

The screw products department, New Britain Machine Co., New Britain, Conn., is working a small number of men on a night shift. Other departments are busier than they have been in months.

The Gilbert & Barker Mfg. Co., West Springfield, Mass., maker of tanks, is employing 800, contrasted with approximately 2000, the normal working force. The company in the past week laid off an additional 100 men.

The employees of the Stanley Rule & Level Co., a subsidiary of the Stanley Works, New Britain, Conn., have returned to work under a wage reduction of about 12½ per cent. The plant was closed for a 10-day period, reopening Aug. 22.

The New York, New Haven & Hartford Railroad Co. is steadily increasing the working force at its East Hartford, Conn., car shops and this week expects to have 400 on the payroll. Most of the men are working for 72c. per hour or about $3.92 per week less than they formerly received.

Effective Aug. 26, the plant of the Collins Co., Collinsville, Conn., maker of agricultural tools, etc., will be closed Mondays and Saturdays.

Following a shutdown of some time, the Aetna Nut Co., Southington, Conn., will resume operations within the immediate future. The full number of 100 employees will be engaged.

The plant of the Royal Typewriter Co., Hartford, Conn., was closed Aug. 17 until Sept. 6, throwing approximately 1200 out of employment. Between 300 and 400 have been retained on the payroll. The plant was operating two days a week, following a two weeks' shutdown.

Business of the Cadillac Motor Car Co. is so favorable, says a statement issued by the general office of the corporation, that the new Clark Avenue plant has been opened. The company, says the statement, has reached 70 per cent of normal production and is employing 70 per cent of the normal working force. More than 1000 men have been added in the last few days, bringing the number up to more than 4000. Almost every department is operating full time.

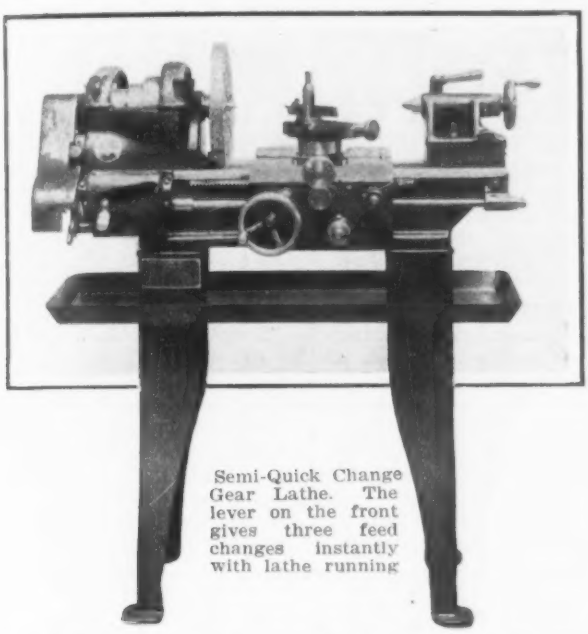
The Nash Motors Co., Kenosha, Wis., in a public statement, says that although it attained a production of 2470 passenger cars at the Kenosha and Milwaukee works for July, orders exceeded production by more than 50 per cent following the price cut effective July 1. It is also stated that a similar condition confronts the company for the monthly period ending Aug. 31, and will carry over well into September.

As part of a program of expansion, the Warren Iron & Steel Co., Warren, Ohio, producer of steels used chiefly in ploughs and tools, has purchased coal lands in Kentucky. Hitherto, the company has purchased its coal requirements on the market. Stockholders are asked, in a letter by President C. B. Loveless, to sanction a $400,000 bond issue, proceeds to be applied to purchase of the coal properties.

Adds to Line of Engine Lathes

The Monarch Machine Tool Co., Sidney, Ohio, has added two new machines to its present line of engine lathes. The sizes are 9 in., and 11 in., respectively and are being offered under the name of Monarch Junior.

Among the features of construction may be mentioned the quick change gear box which is of simple design, one tumbler lever operating on a cone of nine gears, compounded on the end with a 32- and 64-tooth gear and with three other gears on the end gearing, giving 54 changes of threads and feeds. The back gears are locked in and out of position by a ball and spring plunger. The tailstock base is graduated for accurate set-over for taper turning and can be considerably over-hung on the bed. The feed reverse and lead screw reverse are instantly secured and with the lathe



Semi-Quick Change Gear Lathe. The lever on the front gives three feed changes instantly with lathe running

running by a reverse lever on the headstock. The compound rest is gibbed throughout and has large bearing surfaces. Cross feed dial, swivel and compound rest dial are graduated and numbered. The tool post is steel, milled from the bar and tool post screw is the Mac-It non-breakable screw. The steel rack is in one section.

The lead screw is from special screw stock, is chased on a special lathe and tested on a Hartness screw thread comparator, recording 0.0001 in. for accuracy of lead and form of thread. The carriage is 11¾ in. long and is drilled and tapped to receive taper attachment, chasing dial and chasing stop. The apron is said to be foolproof and exceptionally rigid and strong. The upper knurled hand wheel has three distinct marked positions of engagement. When thrown to the left, the longitudinal feed is engaged; to the right the cross feed is engaged; and when in neutral, and only in this position, the half-nut is engaged. The lower knurled hand wheel controls the large friction, which is used to operate both power cross feed and longitudinal feed. It is impossible to engage either feed and the half-nut at the same time and thereby eliminates breakage from that source. Ample oiling facilities are provided.

The countershaft consists of Edgemont friction clutches and cast iron hangers having ring oiling bearings. The lathe can be furnished with floor or bench legs; with oil pan, pump and tank; and in bed lengths of 2½, 3, 4 and 5 ft. For motor drive the countershaft and control clutches are mounted above the headstock on a special bracket. Full quick or semi-quick change gear box can be supplied as desired. Other attachments include: draw-in, taper, turret, chasing dial, chasing stop and metric thread transposing gears. A ½ to ¾ hp. motor is required.

The Graton & Knight Mfg. Co., Worcester, Mass., manufacturer of leather belting, has abolished the titles of general manager and sales manager. Production will be supervised by the administrative board.

German Export Success Exaggerated

Ever since the reparations question was settled between the allied nations and Germany in May there has been a great deal of superficial discussion to the effect that German workmen are working long hours at very low pay; and that all the people of Germany—60,000,000 souls with a single thought—are buckling down to capture the markets of the world, crush foreign competition, and pay off their indemnities with manufactured products, enjoying all the while the advantage of greatly depreciated currency, low cost of living, and low cost of materials as compared with other manufacturing nations.

But L. R. Morris, in an article in this week's *American Exporter Bulletin*, states that: "Germany, instead of being in a better position to compete with the United States than before the war, is in a much worse position. That this is the case is recognized even in Germany; it is a subject of comment in the trade press, and is emphasized in official documents relating to German export trade and reports of prominent banking houses.

Germany an Exporter of Cheap Goods

"It is a fundamental of world trade that each manufacturing country will excel in certain lines of products and certain industries. Germany may be expected to show special qualification in her specialties now, as she did before the war, just as this country excels in certain lines, Great Britain in others, and France in still others. But this is not to say that Germany will be able to compete in any and all lines. Germany will have much the same place now as before the war, in that she will be known chiefly as an exporter of cheap goods.

"American goods have never competed on a price basis except in staple lines—grains, steels, etc. Manufactured goods, which in the fiscal year 1913 formed 48.80 per cent of our total exports, and in June, 1921, formed 52.15 per cent, have never been sold so much on a price basis as on quality and service. In hardware, shoes, machine tools, and many other lines, the United States has always sold large quantities of its goods, even in Germany, although German products in the same lines were sold at cheaper prices.

Labor Costs in Germany

"The most important factor in the cost of production is labor. Now any impression that German labor is working on a less self-centered basis than labor in other countries, or is working at a less rate of increase per hour over pre-war years, in proportion to the increased cost of living, is not true to facts.

"The efficiency of the German workman has deteriorated in the last few years, just as it will always deteriorate in a period of inflation. The Manufacturers' Union of South Germany recently reported workmen turning out only 60 per cent per capita of their pre-war production. During the first four months of this year the coal mines of all Germany, excluding lost territories, employed 92,000 more men than before the war, and produced 22 per cent less coal.

"Belief abroad that German workmen are to-day working long hours is likewise not supported by facts. The normal work day in Germany is 8 hr.; in coal mines, only 7 hr.; a bill has been submitted in the Reichstag to make the day in all mines 7 hr. Last year in the Ruhr mines a general strike was at one time threatened, to enforce the demand for a 6-hr. day.

German Wages Compared with American

"The belief that German workmen are working for extremely low wages, as compared with pre-war conditions, is also a misconception. German real wages are actually 30 per cent higher than before the war, for since 1914 the cost of living has increased 770 per cent, and wages have gone up 1032 per cent.

"In the same period the cost of living in the United States rose 66 per cent, and wages rose 107 per cent, making the rise in United States real wages 25 per cent, or less than that of Germany.

"Between February, 1920, and May, 1921, the cost of living in Germany rose 41 per cent, whereas wages rose 120 per cent, or three times as fast. Between

February, 1920, and May, 1921, the cost of living in the United States declined 15 per cent, and wages declined 3 per cent."

Data presented show how Germany is slipping in her erstwhile control of markets once largely dominated from Berlin. As a single example:

"During the first three months of 1921 imports from the United States into Japan constituted 35 per cent of the total imports, as compared with 18 per cent in the corresponding period of 1914. During the same period, imports from Germany constituted 1.3 per cent of the total as compared with 7 per cent in 1914. Whereas the value of imports from the United States was 254 per cent greater than in 1914, the imports from Germany showed a decrease of 65 per cent from the 1914 figure."

Melting Steel in a Non-Ferrous Electric Furnace

Successful Production of Crucible Quality Steel in Small Baily Resistance Units

NOT all tool steel, whether carbon or high-speed, is made in electric furnaces. There is still a considerable quantity made by the crucible process. One reason why crucibles are still used is because of the convenience of such small pots for special mixtures and the ability to pour without sculling, thus doing without a ladle.

In the belief that the small type of electric resistance furnace might be used in place of the crucible, the Electric Furnace Co., Alliance, Ohio, recently carried out experiments at its laboratory at Salem, Ohio, in melting steel in such a furnace. Attempts were made to adapt it to producing the portion of crucible quality steel now handled in pots.

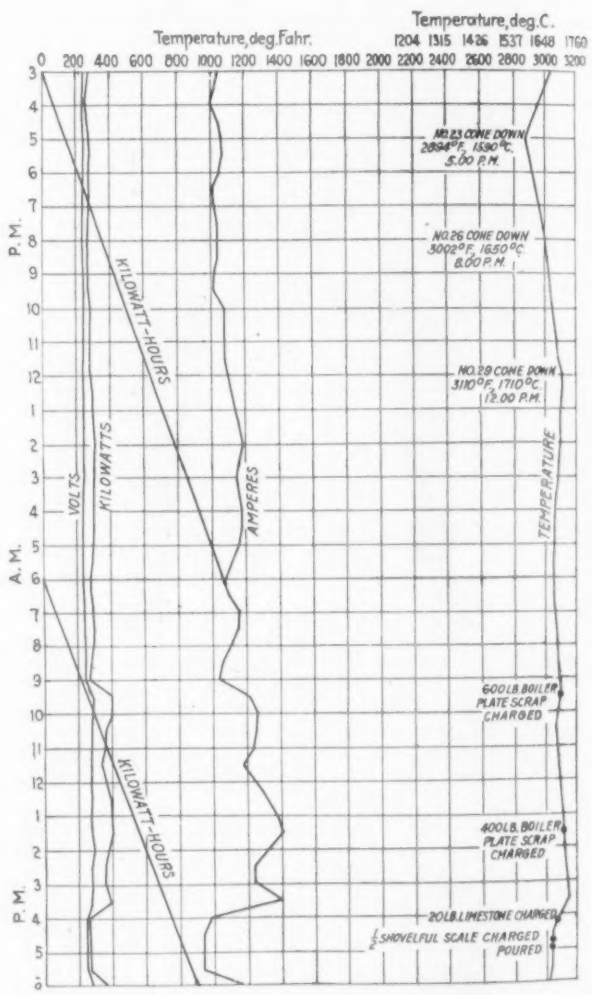
These furnaces have been developed into smaller sizes, holding 200 lb., 750 lb. and 2000 lb., respectively, the largest size also being built in the nose tilting type in connection with a casting table on which molds are mounted; so that the metal can be poured directly to the molds without any ladle at all, as in brass melting practice. This gives uniform temperature throughout the pour, eliminates the ladle entirely and makes the pouring condition analogous to that of crucible practice. The following is taken from the report of the company's results and claims.

This test was also used as a means of determining the maximum temperature that could be obtained and maintained in a furnace of the resistance type, and it was found that there was no difficulty in keeping steel of as low carbon content as 0.05 per cent at a good pouring temperature. The maximum temperature obtained on the hearth in this test was 1850 deg. C., at which the magnesite lining commenced to volatilize.

The furnace used for this steel test was a standard 7-ft. diameter brass melting furnace, having a hearth capacity of 2000 lb.; and, in addition to the 4½-in. brick lining used in brass melting, a 9-in. magnesite brick lining was placed directly inside the ordinary fire brick lining. The roof was made of 9-in. silica soap shapes, and was not insulated. The accompanying test sheet shows not only the temperatures obtained, but the melting rate as well.

These tests, and subsequent tests, indicated that crucible quality steel can be made and poured in small furnaces of this type with a current consumption of not to exceed 1200 kw.hr. per ton which, while much higher than the figures obtained in arc practice, nevertheless will produce steel much more economically than by crucible practice.

There seems every reason to believe that furnaces of this type can be advantageously used to replace a large part of the crucible steel making capacity that is still handled in pots. A particularly advantageous feature of the resistance type of furnaces for this work is that the furnace atmosphere is under better control than in a furnace of any other type, whether of the electric arc type or in a crucible pit furnace. This particular feature has been one of the advantages in handling non-ferrous metals, particularly of rolling mill quality, since the furnace can be kept much more tightly closed than other types and, therefore, the amount of oxides and blow holes in the metal reduced; the bath of metal in this type furnace, not being agitated as in the case of the arc furnace, almost directly duplicates conditions in crucible practice, in allowing not only the gases to rise to the top of the bath but also any slag inclusions or other foreign substances.



Steel Melting Test in a Baily Electric Resistance Furnace at the Salem Laboratory of the Electric Furnace Co.

Time	Amperes	Kw.	Voltage	Bath Temp., Deg. Fahr.	Meter Reading, Kw. Hr.	Remarks
8:00 P.M.	1040	68	60	3002	200,454	[1]
9:00	1020	67	60	3030	.....	
10:00	1080	70	60	3050	.....	
11:00	1080	70	60	3080	.....	
12:00	1100	70	60	3110	.....	[2]
1:00 A.M.	1140	74	60	3100	.....	
2:00	1180	76	60	3100	.....	
3:00	1140	75	60	3090	.....	
4:00	1180	75	60	3070	.....	
5:00	1160	75	60	3060	.....	
6:00	1080	71	60	3050	201,185	
7:00	1160	75	61	3060	.....	
8:00	1120	73	61	3080	201,333	
9:00	1040	67	60	3090	201,391	
9:30	1000	65	61	3100	201,421	[3]
10:00	1260	100	75	3080	201,462	
11:00	1240	90	70	3070	201,553	
12:00	1240	92	69	3090	201,647	
1:00 P.M.	1380	98	70	3110	201,733	
1:30	1400	100	69	3120	201,792	[4]
2:00	1320	95	74	3120	201,840	
3:00	1240	90	70	3140	201,924	
4:00	980	65	64	3090	202,009	[5]

Remarks:
[1] No. 26 cone down at 3002 deg. Fahr.
[2] No. 29 cone down.
[3] 600 lb. boiler plate scrap charged.
[4] 400 lb. boiler plate scrap charged.
[5] 20 lb. limestone charged, 4:10 p.m.; 5 lb. roll scale charged, 4:40 p.m.; poured at 4:52 p.m.

WHEELING DISTRICT

The Strike Against Wheeling Steel Corporation —Sheet Market Conditions

WHEELING, W. Va., Aug. 24.—The answer of the Wheeling Steel Corporation to the strike called against it a week ago to-day by the Amalgamated Association of Iron, Steel and Tin Workers is point to the fact that it has in operation the Belmont mill of the Wheeling Steel & Iron Co., the Benwood plant, where it is running at a 50 per cent gait in the skelp mills and pipe furnaces and has its steel works there going after a shutdown of a week, and that the LaBelle Iron Works is running 40 per cent of capacity both in Wheeling and Steubenville. The company is making no attempt at present to start up the Wheeling Steel & Iron Co. tin mills at Yorkville, Ohio, nor any of the Whitaker-Glessner Co. plants, but since the company is carrying good sized stocks of sheets and tin plate, built up earlier in the year, and current orders largely can be supplied from stocks, the necessity of starting up idle capacity is not pressing. On sheets the company can supply sizes and gages not in stock from the Steubenville, Ohio, plant of LaBelle Iron Works, which is in operation. If orders continue to grow in number as they have in the past few weeks, it is possible that the Portsmouth, Ohio, works of the Whitaker-Glessner Co. will be started up.

There is little or no outward sign that a strike exists and none is likely to appear until the company attempts to start up some of the sheet and tin plate mills hitherto operated under an agreement with the Amalgamated association. The Wheeling Steel Corporation officials view the situation calmly. They believe firmly in the principle of the open shop and having decided that the interests of the workmen and the stockholders are better served by such a policy, they are not disposed to go back to dealing with the unions. There has been no lockout, as claimed by union leaders, company officials declare; there has been simply the substitution of direct dealing with the men for indirect dealing with them through union officials. Men can work in the plants whether they are members of the union or not. In announcing the change it was stated that the same wages as are paid in the union mills would be paid in the plants of the company, and as indicating the wage ideas of the company, one official, who is active and conspicuous in its affairs, declares that 30c. an hour, the ruling rate for common labor, is low enough with rents and the necessaries of life as high as they are to-day. The belief exists among Wheeling Steel Corporation officials that the company has been singled out for special attack by the Amalgamated association, pointing out that in no other steel-making center is the latter organization as active as it is in the Wheeling district.

Business Volume and Prices

In common with other districts steel manufacturers here are enjoying a somewhat better business. No big orders are being received, but the number is greater and they are so well distributed among the various products of local plants that manufacturers are encouraged to believe that consumers' and jobbers' stocks are pretty low and that buying will be constant during the remainder of the year. The feeling prevails here, as elsewhere, that prices have gone about as low as they can unless there is a reduction in railroad freight rates, which would permit some lowering of producing costs, and some will not admit that this development will bring material recessions from present prices, claiming that such rate reduction as is likely to be made would no more than absorb the present difference between present costs and selling prices.

On the basis of recent business done by mills in this district, black sheets are quotable at 2.75c. to 3c. base, Pittsburgh; galvanized at 3.75c. to 4c. and blue annealed at 2.25c. to 2.40c. Sheet bars have been sold in this district at $30 f.o.b. makers' mill and 4-in. rerolling billets at $29 to $30, mostly at $29.50. So little demand is developing in slabs that the price is indefinite, but they probably could be placed at $30. Both LaBelle Iron Works and Weirton Steel Co. have supplies of basic pig iron that are available for market. The latter company is quoting $20 furnace, but $21 is as low as LaBelle Iron Works would consider. The latter is not actually seeking pig iron business and prefers to carry the iron rather than sell at less than $21, which it claims is below replacing costs, and these, it is asserted, have been figured upon a basis of the lowest probable fuel, ore and labor costs that can be reasonably expected over the next six months and also make allowance for a possible freight rate reduction.

Operation in Wheeling District

Operations in the district, aside from those of the Wheeling Steel Corporation plants, still are low. National Tube Co. has its plant at Benwood down. Laughlin Works, American Sheet & Tin Plate Co., Martins Ferry, Ohio, last week started up about half of the tin mills there, but this is only for a brief run and the resumption is merely part of the plan of the company to give some work to the men of all plants so long as orders are not sufficient to keep all plants running. Carnegie Steel Co. plants at Bellaire, Steubenville and Mingo are all idle. Weirton Steel Co., Weirton, W. Va., is running rather well. In addition to its blast furnace, it has five of its seven open hearth furnaces running and by concentrating its tin plate business at Weirton it is able to keep the 26 mills there running 16 turns a week. Operation of its strip mills are averaging about 35 per cent full.

After several postponements due to labor conditions, which delayed alterations in the old Schmulback building, now the Wheeling Steel Corporation building, Market Street, Wheeling, all of the executive offices of the Wheeling Steel Corporation are located in that building. It is expected in the near future to have the offices of all of the subsidiaries quartered in this building. This means the eventual abandonment of all offices elsewhere, leaving only plant operating offices outside of Wheeling. The company expects to sell the old Wheeling Steel & Iron Co. building, Main and South Streets, Wheeling.

Employment in New York State Factories

Figures for June from the State Department of Labor show a falling off during the month, both in the number of employees at work and in the total wages received. The former loss is 1.9 per cent; the latter, 2.4 per cent. Under the headings of Metals, Machinery and Conveyances, which heading included 30.1 per cent of all employees reported in June, the falling off during the month was much more marked, having been 7.2 per cent in number of employees and 8.5 per cent in total wages. The heaviest decreases in this group were under the headings of Pig Iron and Rolling Mill products, Structural and Architectural Iron Works, and Cars, Locomotives and Railroad Repair Shops. Under these headings the number of employees, compared with June, 1914, is now 52, 42, and 64 per cent, respectively, showing a falling off of approximately half.

A statement recently made on behalf of union molders, concerning labor conditions in Indianapolis foundries, is contradicted by the employing companies. The situation at Indianapolis is that only two out of 33 foundries reporting have any agreement with the molders' union for a definite time and these two are stove foundries. The six other union shops have no present agreement with the union. Since the reduction in wages from 90 cents per hour to 75 cents, made in April, their molders have been working from day to day, without an agreement, at the reduced rate. There are 19 open-shop and five non-union foundries. The one other foundry of the 33 has not begun operations, its machinery having just been installed.

The Sharon Pressed Steel Co., Sharon, Pa., manufacturer of automobile frames, has increased the operating rate of its plant at Wheatland, Pa., to 40 per cent. Officials state the outlook for business continues bright. A number of substantial orders have been placed.

BRITISH PROTECTIVE BILL

Protective Duties for Certain Key Industries and a Five-Year Anti-Dumping Provision

WASHINGTON, Aug. 23.—The bureau of foreign and domestic commerce has received a cablegram from Commercial Attache Alfred P. Dennis, London, stating that the House of Commons has passed the British Safeguarding-of-Industries bill carrying protective duties on certain special lines in key industries and also an anti-dumping clause, which is to remain in force for five years. The measure is certified as a money bill and is therefore incapable of amendment by the House of Lords and becomes statutory in the present form on receiving Royal assent.

Among products embraced within the measure, which imposes a duty of one-third of the value of the goods, are metallic tungsten, ferrotungsten and manufactured products of metallic tungsten, crucibles, gages and measuring instruments of precision of the types used in metal working shops, various chemicals, optical glass, etc.

The anti-dumping feature is applicable under conditions of collapsed exchanges or in the ordinary acceptance of the term. Dumping is defined as the sale or offer of goods in the United Kingdom below the cost of production in the country of origin.

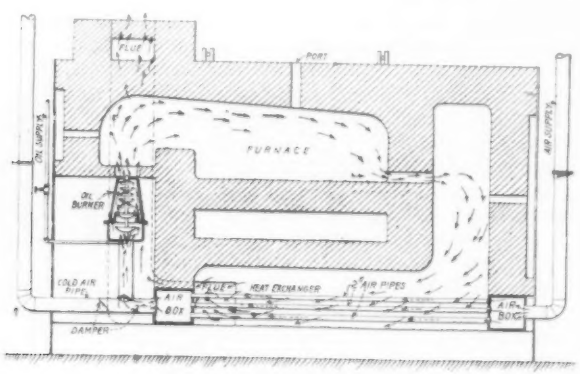
Controversial points have to do, first, with the confusion between the cost of production and selling prices abroad, cost of production being defined in the bill itself as the current sterling equivalent of 95 per cent of either the wholesale price at the works less internal duties leviable in the country of origin, or, if the wholesale price cannot be established through actual sales, a reasonable price computed on wholesale prices charged for similar goods; and, secondly, with conflicts between the bill and existing treaties with other nations. The part having to do with depreciated exchanges appears to contravene commercial treaties with 26 foreign powers, it is stated. The government gives assurance that it does not intend to denounce any existing commercial treaties and, as a consequence, the only countries of commercial and competitive importance to which the exchange provisions could be made to apply are France, Germany and whatever remains of the old Austrian-Hungarian Empire.

The original bill clothed the Board of Trade with final competence as to the issue of anti-dumping orders. This was regarded as an assumption of taking authority and was amended so that all Board of Trade orders against dumped goods are subject to confirmation by the House of Commons.

The amended measure also provides that trades demanding protection against dumped goods must show that the British manufacture of similar goods is being carried on with reasonable efficiency and economy.

Oil Burner Uses Preheated Air

It is a universal practice in Pittsburgh, Cleveland, Buffalo, Wheeling, Cincinnati and Columbus to cut off industrial consumers of natural gas so that domestic consumers may have sufficient gas for cooking and heating purposes, when the supply is short. Two causes have contributed to the shortage of natural gas supplies: wide-spread use of the fuel, and gradual depletion of the Appalachian field after thirty years' constant drain. The natural gas companies have, for several years past, advised industrial users to provide other appliances and fuel for emergency purposes.



Setting of Burner and Furnace, Showing Path of Heated Air from Burner Through Furnace, Back Around Air Inlet Pipes and Up Flue

To meet this condition, the Anderson-Garner-Shaner oil-burning apparatus has been designed and patented, and is being marketed by the Pittsburgh Saw & Manufacturing Co. During the development stages of this apparatus tests were made of its efficiency and utility in commercial ovens, refineries, glass plants and forge furnaces. The cost of operation with oil at 8c. per gal. is about equal to that of natural gas at 45c. per 1000 cu. ft.

This oil-burning apparatus is of the gasification variety. Air, under a pressure of from ½ to 2 oz., delivered by a small fan or blower, is adequate for the heat requirements of metal, heat-treating, forging or glass plants.

The forging furnace shown is 4 ft. wide, 8 ft. long and 5 ft. high. Arrangement is made for the exchange of heat between outgoing, hot flue gases and the fresh incoming air. All of the heat imparted to the incoming air contributes materially to efficiency of use of the fuel, and makes it possible to attain high temperatures in the heating chamber. This forging furnace has been in practically continuous operation for some weeks, and it is said that at no time has the temperature of the flue gases at a point 6 in. above the furnace exceeded 650 deg. Fahr.

Temperatures of 2600 to 2800 deg. Fahr. are obtained and maintained in the heating chamber. It is possible by means of thermostatic connections to maintain and control temperature between 500 and 2800 deg. Fahr. The consumption of oil in heating up the forging furnace is placed at 5 to 6 gal. per hr. The time required, depending upon the oil consumption, is 1 to 1½ hr. When once the furnace has been raised to the desired temperature of 2000 to 2800 deg. Fahr. the oil consumption, to maintain this temperature, is said to average 2½ to 3 gal. per hr.

Cost of Living Stationary

Figures of the Bureau of Labor Statistics show no change in the index number of the cost of living in July as compared with June. Wholesale prices in both months were 48 per cent above the average of 1913. Metals and metal products continue to hold the lowest price position, with the exception of farm products, being now only 25 per cent above the 1913 figure, or well below the average run of prices. House furnishing goods and building materials still maintain their positions at the top of the list, being respectively 135 and 100 per cent above 1913 figures.

In the following table all the figures given represent wholesale prices, except the last line—retail prices of food. The figures are based on 1913 at 100.

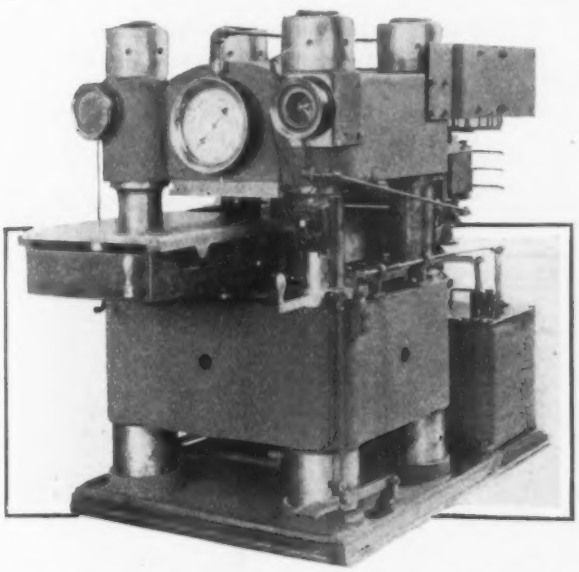
	1920	1921		Percentage Reduction	
	July	June	July	A*	B†
Farm products	236	113	115	51.3	89.6
Food, etc.	268	132	134	50.0	81.8
Cloths and clothing	317	180	179	43.5	68.0
Fuel and lighting	252	187	184	27.0	37.8
Metals and metal prod.	191	132	125	34.6	73.1
Building materials	333	202	200	39.9	58.5
Chemicals and drugs	...	166	163	24.9	45.2
House-furnishing goods	362	250	235	35.1	43.5
Miscellaneous	243	150	149	38.7	66.4
All commodities	262	148	148	43.5	72.1
RETAIL COST OF FOOD	219	144	148	32.4	58.3

*Reduction in one year. †Percentage cut from the excess of May, 1920 (the "peak" month) over the average for 1913.

Lead Molding Hydraulic Press

The hydraulic press shown in the accompanying illustration is a recent product of the Hydraulic Press Mfg. Co., Mount Gilead, Ohio. It was designed and built for the Menasha Machinery Co., Menasha, Wis., and although intended primarily for use in the Clayhourn process of solidifying electroplates, it is regarded as equally serviceable as a lead molding press.

The press, motor, pump, reservoir, valve and motor controls are contained in a steel cabinet 5 ft. 4 in. x 5 ft. 2 in. x 3 ft. 7⅛ in. The machine complete weighs



The Platen Travels In and Out, Stopping Automatically When Reaching the Extreme Position

about 6 tons and is capable of exerting 1000 tons pressure. Lightness is secured without sacrificing strength and rigidity by using heat-treated nickel steel castings for the cylinder and press heads and forged nickel steel strain rods. Among the special features may be mentioned the cylinder which is of the differential type having one small cylinder of 3¾ in. bore set inside and at the bottom of the 18-in. cylinder. A single pressure pump is furnished. Pressure is applied first in the small cylinder which raises the main ram until the daylight space is closed, the large cylinder at the same time filling through a surge check valve by suction. When the pressure builds up in the small cylinder, which occurs as soon as the daylight is closed, a valve automatically opens and admits pressure into the large cylinder. In this manner a pump having a relatively small discharge may be used and rapid operation secured. To prevent air from sucking into the large cylinder while it is being filled by suction, two U leather packings are used with the open sides of the U adjacent to each other. A small pipe connection in the side of the cylinder admits the same pressure between the two packings as is applied to the small ram. The packings are thus expanded before the main ram starts to ascend and remain expanded during the operation.

A special operating valve and pump are placed inside the reservoir and operate under oil, the pump being belt driven by a motor on the back of the press head. The valve is operated by two levers, one of which is worked by hand, applying and releasing pressure; the other being operated by the foot pedal and used to raise the stem of a safety valve in order to release the pressure from the pump. A check valve is placed between the safety and the operating valves, so that pressure may be held on the press at any point and for as long as may be desired. The press is also equipped with a pressure gage, electrical control gage and travel indicator.

A price reduction of 10 per cent is announced by the Link-Belt Co., from its Chicago office, on malleable iron and steel chains, sprockets, buckets and other products, to take effect Aug. 22.

Fewer Steel Men at Lower Wages

Unemployment is still increasing in iron and steel works, according to the Bureau of Labor Statistics report for July, which shows a loss of 14,633 men from June, representing 12.7 per cent. The loss from July, 1920, is 89,000 men, or 46.9 per cent. Payrolls showed an even greater decrease, the drop from June to July being 24.4 per cent, while that for the year was 71.4 per cent. As a result, the individual pay envelope has fallen from $72.11 in July, 1920, to $38.17 last month—a cut of 47.1 per cent. This decrease in earnings is greater than the 43.5 per cent drop in the cost of living, from July, 1920, to July, 1921.

Comparative figures for June and July, 1921, and July, 1920, in iron and steel mills, automobile factories and car building and repairing shops follow:

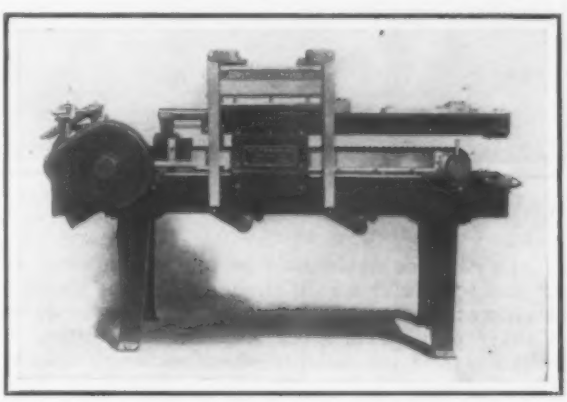
Month	Number of Establishments	Number of Men	Half-Month Payroll	Average Pay Envelope
Iron and Steel				
June, 1921.....	118	115,411	$5,088,831	$44.10
July, 1921.....	118	100,778	3,846,541	38.17
July, 1920.....	118	189,770	13,683,927	72.11
Automobiles				
June, 1921.....	45	76,734	2,620,084*	34.15
July, 1921.....	45	79,064	2,622,596*	33.17
July, 1920.....	49	126,997	4,335,639*	34.14
Car Building and Repairing				
June, 1921.....	59	39,335	2,670,021	67.88
July, 1921.....	59	38,378	2,272,954	59.22
July, 1920.....	62	65,386	4,082,301	62.43

*Weekly.

Automatic Lockseaming Machine

An automatic machine which produces a lock-seamed article direct from the blank without an extra operation is being marketed by the Stolp Co., Inc., Geneva, N. Y. The machine is also equipped with a self-feeding attachment by which lock-seamed tubes can be produced directly from a coil of metal. It is said to handle taper tubes within certain limits and lockseam tubes of any thickness of metal.

The machine is shown in the accompanying illustration. The blank on being inserted is pressed into a U



A Mandrel Pushes the Blank Endwise Through the Lockseaming Dies

shape after which the round mandrel enters the blank and pushes it through the lockseaming dies endwise. The mandrel is fastened to a crosshead which straddles a chain. The chain carries the cross head back and forth the whole length of the frame. As the mandrel reaches the back position a U-shaped punch descends, pressing the blank into a position in line with the mandrel. The punch then leaves the blank and the mandrel enters, carrying it forward through the lockseaming dies which are shaped to close the blank and put the lockseam in it. The dies have no moving parts. The finished product comes out at the end of the machine, the mandrel withdrawing to its starting position to repeat the operation.

Sales representation of the Farber Fire Brick Co., St. Louis, in the Pittsburgh district has been taken over by the Dover Fire Clay Brick Co. of Cleveland.

New Crawling Tractor Crane

To meet the need for a full revolving tractor crane which can be operated independently of rails, the Industrial Works, Bay City, Mich., have developed the crane shown in the accompanying illustration. It is built in two types, the type BC having a capacity of 20,000 lb. at 12 ft. radius and equipped with continuous crawling tractor belts; and the type BT with a capacity of 18,000 lb. at 10 ft. radius, equipped with four broad-gage tractor wheels.

Operation is by means of an internal combustion engine. The boom is 30 ft. long and made up of two channels strongly latticed with angles and tie plates. The steering, while propelling, is controlled by the operator from his position in the revolving upperworks, by manipulation of the friction clutches and brakes controlling the motion of each tractor belt. Through these clutches and brakes either tractor belt may be readily and instantly disconnected from the motor while the other belt continues traveling at the normal rate of speed. The disconnected belt can be held stationary by applying the brake, can be allowed to coast with the brake and clutch both disengaged or the clutch can be allowed to slip, thus allowing the operator to turn as sharp or as wide a corner as he may select. For simplicity and accessibility the clutches, brakes and lever mechanism for steering are located in the revolving upper works.

The Capacity Is 20,000 Lb. at a 12-Ft. Radius. Steering is by means of friction clutches and brakes controlling the motion of each tractor belt

The makers emphasize the propelling and steering arrangement as a new and exclusive feature, stating that it enables the operator to propel and steer the crane independently of all other motions and as easily as a wheel or "caterpillar" tractor. The capacity and speed of these cranes make them adaptable to the needs of road contractors, coal dealers, gravel, sand and stone producers, foundries, and moderate-size manufacturing plants. They can be equipped to handle hook and block; grab bucket; drag scraper bucket; wood grapple; electric lifting magnet; shovel dipper and pile driver loads with drop hammer.

Luria Bros. & Co., iron and steel scrap, has in operation its new yard located on South Avenue and Baltimore & Ohio Railroad tracks, on the north side, Pittsburgh. The yard covers an area of about six acres, has three tracks and a capacity for handling 68 carloads of material at one time, and is equipped with three shears and a 25-ton locomotive.

July Fabricated Steel Business

The amount of fabricated steel business that was contracted for in July, according to the records of the Bridge Builders and Structural Society, George E. Gifford, secretary, 50 Church Street, New York, was 60,200 tons. This corresponds to 33½ per cent of the capacity of the bridge and structural shops of the country and compares with 66,900 tons, or 37 per cent, for June. The amount of business taken in the first half of 1921 averaged about 47,250 tons per month.

Efforts to Relieve Unemployment

WASHINGTON, Aug. 23.—The report of the Bureau of Labor Statistics sent to the Senate by Secretary of Labor Davis, reporting 5,735,000 persons out of employment in the United States, has stirred the administration and Congress to increased efforts designed to relieve the situation. Speedier action for the purpose of bringing about economic readjustment is being urged, and is one reason why it has been desired to enact quickly the railroad funding bill, and other measures that would mean more employment. Unemployment is the result of poor national economic management, according to Eugene Meyer, Jr., director of the War Finance Corporation, who stated that unless the Government acts there will be a most serious situation for it to confront next winter.

Of the total reported unemployed by the Bureau of Labor Statistics, 3,900,000 (more than two-thirds) are classified under manufacturing and mechanical industries.

British Steel and Iron Output and the Coal Strike

The serious effect of the coal strike on the pig iron and steel output of Great Britain is reflected by the following table in gross tons:

1921	Pig Iron	Steel Ingots and Castings
January	642,100	493,400
February	463,600	483,500
March	386,000	359,100
April	60,300	70,600
May	13,600	5,600
June	800	1,900
Aver. per month, 1920	667,320	754,730

Only two blast furnaces were operated in June and the 1900 tons of steel, credited in that month, was steel castings.

July Exports Under One-Sixth of January

Falling Off General—Lowest Figure in Nearly Seven Years—Many Items Less Than 10 Per Cent of July, 1920—Imports Also Low, but Slightly Better Than June

WASHINGTON, Aug. 23.—Exports of iron and steel in July totaled only 86,523 tons, and were but 925 tons above the low point in August, 1914, when the outbreak of the European war temporarily demoralized the industry and reduced exports to 85,598 tons. The value of July exports was $27,639,787. For the seven months ending with July exports totaled 1,676,348 tons, valued at $465,374,692. The July exports showed a drop of 32,558 tons under those of June, 119,081 tons. The striking reversal of the export movement is shown when comparison is made with that of one year ago, the total for July, 1920, having been 489,223 tons and for the seven months ending then it was 2,701,400 tons.

Exports, January, 1919, to July, 1921, Inclusive

	Gross Tons		
	All Iron and Steel	Pig Iron	Semi-finished Material
January, 1919	360,456	35,793	11,594
February	234,793	20,178	10,407
March	344,506	22,054	8,176
April	408,204	16,300	11,488
May	447,050	32,233	20,771
June	544,580	39,540	46,016
July	287,823	38,373	21,318
August	396,743	36,071	36,162
September	363,505	18,991	37,513
October	302,456	14,108	20,713
November	295,045	21,429	13,211
December	254,676	14,612	21,538
Calendar year 1919.	4,239,837	309,682	258,907
January, 1920	333,601	18,468	19,937
February	308,185	15,739	22,693
March	417,216	22,740	30,444
April	395,120	14,608	19,032
May	420,359	13,032	16,370
June	402,707	17,075	29,811
Fiscal year 1920...	4,212,732	248,126	288,766
July	458,866	29,647	17,243
August	431,484	22,645	20,920
September	409,200	22,724	18,113
October	452,015	17,296	11,853
November	434,297	13,929	7,042
December	498,765	10,055	3,415
Calendar year 1920.	4,961,851	217,958	216,873
January, 1921	547,394	3,710	315
February	393,328	1,307	92
March	230,635	2,320	1,023
April	162,592	1,234	678
May	142,551	2,541	749
June	119,081	1,689	1,106
Fiscal year 1921...	4,168,619	129,541	82,549
July	86,523	2,744	363
Seven months	1,676,348	15,493	4,326

Exports for January, 1921, were reported at 547,394 tons.

Machinery exports for July amounted to $14,758,741, as compared with $37,303,748 in July, 1920, and for the seven months of the present year they aggregated $214,832,576, as against $258,813,489 for the same period of last year. In June, 1921, machinery exports amounted to $22,044,833.

Imports of iron and steel in July totaled 10,286 tons, valued at $2,253,110, exclusive of those relating to sheets and plates, which are omitted in view of an error made by the Bureau in its compilation on these products. The incoming tonnage for this month was greater than in June, when importations totaled 8929 tons. For the seven months ending with July imports amounted to 62,438 tons, valued at $18,279,024. Those of July, 1920, totaled 31,863 tons and for the seven months ending with that month they were 257,782 tons.

Steel rails were exported in greater volume than any other product in July, shipments amounted to 20,074 tons. Next in importance came welded pipe, with an outward movement of 14,485 tons. Structural steel took third rank, with 11,320 tons exported. Other lines generally showed a drop and some of them almost reached the vanishing point, among these being ferromanganese, ferrosilicon, horseshoes and railroad spikes.

Steel rails also were imported in July in greater quantity than any other product, the amount being

Exports of Iron and Steel

	Gross Tons			
	July		Seven Months Ended July 31	
	1920	1921	1920	1921
Ferromanganese	417	15	934	413
Ferrosilicon	97	64	306	218
Pig iron	29,133	2,744	128,995	15,493
Scrap	24,906	1,524	84,021	24,198
Bar iron	33,729	149	22,388	11,290
Wire rods	12,258	854	77,588	10,964
Steel bars	55,933	5,385	363,288	152,700
Billets, ingots, blooms.	17,243	363	155,530	4,326
Bolts and nuts	2,639	1,028	22,290	19,449
Hoops and bands	4,733	1,263	31,906	13,393
Horseshoes	198	12	1,141	364
Cut nails	354	42	1,296	588
Wire nails	8,184	992	43,959	17,296
All other nails, including tacks	878	445	6,534	3,243
Cast pipe and fittings	3,851	2,634	30,942	37,814
Welded pipe and fittings	28,075	14,485	147,675	288,678
Radiators and cast house boilers	486	238	4,285	1,644
Railroad spikes	1,270	16	9,794	6,558
Steel rails	51,869	20,074	333,834	256,938
Galvanized sheets and plates	10,642	2,634	63,834	40,578
All other sheets and plates	1,802	652	17,659	9,756
Steel plates	58,360	6,205	494,505	282,414
Steel sheets	15,220	6,819	92,261	70,459
Ship plates, punched and shaped	5,522	294	25,369	9,401
Structural steel	36,054	11,320	236,695	244,810
Tin and terne plates	17,553	3,024	139,995	77,302
Barb wire	10,439	1,432	72,151	20,372
All other wire	17,358	1,860	92,256	55,689
Total	489,223	86,523	2,701,400	1,676,348

2597 tons. Pig iron came next, with 2567 tons; while billets, without alloys, were third, with 2469 tons. These three items represented much more than one-half of the entire importations of blast furnace, semi-

Imports of Iron and Steel

	Gross Tons			
	July		Seven Mos. Ended July 31	
	1920	1921	1920	1921
Ferromanganese	2,448	275	23,711	5,481
Ferrosilicon	1,265	309	9,436	1,922
Pig iron	7,335	2,567	85,387	15,595
Scrap	7,953	1,650	85,672	21,381
Bar iron	564	274	2,468	1,006
Structural steel	192	46	841	405
Billets, without alloys	1,313	2,469	17,416	2,916
All other billets	481	22	2,803	1,020
Steel rails	9,550	2,597	26,952	11,898
Sheets and Plates	79	....	903	....
Tin and terne plates	17	....	222	308
Wire rods	666	77	1,971	506
Total	31,863	*10,286	257,782	*62,438
Manganese ore and oxide.	18,447	5,028	234,989	297,403

*Omitting tonnage of sheets and plates, which the Bureau is having rechecked.

finished and finished lines. Imports of manganese ore in July totaled 5028 tons, compared with 18,447 tons last year.

A 12-story building to serve as the New York warehouse of the Dodge Sales & Engineering Co., Mishawaka, Ind., is being erected on West Broadway, from Murray Street to Park Place. The structure has been provisionally named "Power and Transmission Building," for it is hoped to make of it a new center for factory and mill supplies of this character. The eight upper stories are to be leased, in whole or in part, to concerns in the power field.

NEW SCRAP CLASSIFICATION

Schedule Prepared by Division of Purchases and Supplies of American Railway Association

The American Railway Association, division 4, purchases and supplies, has prepared a new scrap iron and steel classification which will come up for adoption at that body's next meeting, which will take place in the spring of 1922. The classification is of especial interest to old material dealers because, if adopted, it will be used by all of the railroads and will eliminate the special classifications now in use. Although most railroads are now following the classification adopted by the United States Railroad Administration, which superseded the old Railway Storekeepers' Association classification, there are still some roads using the latter and others which use private classifications. The adoption of a uniform classification will do away with much of the confusion resulting from the present system.

The proposed classification follows the old storekeepers' classification more closely than any of the other various classifications. Thus far the only criticism of it reported by the dealers is that it does not stipulate that No. 1 steel rails is intended to cover rails used for rerolling purposes. There has always been controversy between the railroads and the rerolling mills as to what is and what is not a rerolling rail; and without a definite stipulation in the classification, further disagreement of this kind is bound to occur. This situation was recognized when the Railroad Administration classification was prepared and it is urged that a like stipulation should be added to the proposed classification.

American Railway Association Classification of Scrap Iron and Steel

Item No. Description

1 Arch bars and transoms, iron.
2 Arch bars and transoms, steel.
3 Axles, steel—Car and locomotive, 6 in. diameter and over at center.
4 Axles, steel—Car and locomotive, under 6 in. diameter at center.
5 Axles, steel, hollow bored.
6 Axles, iron—Car and locomotive, all sizes.
7 Angle and splice bars—Steel angle bars and splice bars.
8 Angle and splice bars—Patented joints only.
9 Angle bars, splices and fish plates, iron.
10 Boilers, fireboxes and tanks, uncut—All kinds, attached or separate. Specify whether with or without flues.
11 Boilers, fireboxes and tanks, cut up—Iron or steel boiler or tank plate, cut into sheets and rings (with or without stay bolts).
12 Brake beams, uncut.
13 Built up bolsters.
14 No. 1 busheling—Iron and soft steel pipes and flues (free from scales); tank and bands No. 12 and heavier, boiler plate punchings and clippings, and soft steel and iron drop forgings and trimmings, nothing to be over 8 in. long or wide, free from galvanized or tinned stock.
15 Cast, Railroad No. 1—Pieces weighing 150 lb. or less, includes new grates, new stove plate and clean cast-iron culvert, soil and water pipe, to be free from brake shoes and burnt grates, burnt grate frames, burnt stove plate and all other burnt castings.
16 Cast, Railroad No. 2—Pieces weighing over 150 lb. but not more than 500 lb.; otherwise same specifications as Class No. 15.
17 Cast, Railroad No. 3—Pieces weighing over 500 lb.; includes cylinders and driving wheel centers and all other castings; otherwise same specification as classification No. 15.
18 Cast, Railroad No. 4—All kinds of burnt castings, including grate bars, grate frames and stove plate.
19 Cast-iron brake shoes—All shoes with steel back or with steel or wrought iron inserts, both driving and car. Excludes composition filled shoes.
20 Cast-iron borings—Clean and free from other metals, dirt and lumps.
21 Cast steel No. 1—Charging box size, 5 ft. and under, under 18 in. wide; no piece weighing less than 10 lb. to be included.
22 Cast steel No. 2—Steel castings over 18 in. wide and over 5 ft. long; may include cast steel truck or body bolsters and cast steel locomotive frames.
23 Cast steel truck and body bolsters.
24 Couplers and knuckles, steel and steel knuckle locks.
25 Tools and tool steel—Worn out steel tools, tool steel, files, including old claw bars, pinch bars, spike mauls, track wrenches, picks, axes, adzes, chisels, drills, hammers, knuckle pins, punches, finger pins, bits, draft keys, bar steel weighing under 10 lb. per piece.
26 Frogs and switches, uncut—Steel and iron frogs and switches that have not been cut apart, exclusive of manganese material.
27 Flues, tubes and pipes, wrought iron and steel No. 1—1 in. diameter and over, 2 ft. long and over, free from fittings, paint, galvanized or enameled, coiled or bent material.
28 Flues, tubes and pipes, wrought iron and steel No. 2—Ungraded wrought iron and steel flues, tubes and pipe, including fittings attached.
29 Limed iron and steel—All kinds of material from interior of boilers (except flues which are incrusted with lime or corroded by the action of water) such as crown bars, crown bar bolts, stay bolts, etc.
30 Malleable—All malleable castings.
31 Melting steel, heavy, No. 1—Charging box size, ¼ in. thick and over and not over 18 in. wide, or over 3 ft. long, free from all attachments, may include chain, carbon tool steel, files, punchings and all other steel scrap that will come within the above dimensions, unless otherwise specified.
32 Melting steel, heavy, No. 2—All steel over 5 ft. long or over 18 in. wide.
33 Rail, iron, No. 1—Iron tee rail, 3 ft. long and over, toe section 40 lb. per yard and over, free from frog, switch, guard or crooked rail.
34 Rail, iron, miscellaneous—All iron rail, not otherwise specified, including guard rails, switch points and frogs, when cut apart. Does not include frog fillers or plates.
35 Rail, steel, No. 1—Standard section steel tee rails, 50 lb. per yard and over, 5 ft. long and over, free from badly bent and twisted rails, frog, switch and guard rails and rails with split heads and broken flanges. Note: All rail suitable for relaying must be classified as relaying rail separate from all scrap rail.
36 Rail, steel, No. 2—Cropped rail ends under 3 ft. long, 50 lb. and over, standard section.
37 Rail, steel, No. 3—3 ft. long and over, 50 lb. and over, standard section having split heads or ball of rail worn with wheel flanges, curved and bent rails, free from frog, switch and guard rails.
38 Rail, steel, No. 4—All sections of rail not coming under specifications of No. 1, 2 or 3 rail, including frogs cut apart, guard rails and switch points. Does not include frog fillers or plates.
39 Structural wrought iron, cut apart—Wrought iron structural shapes from bridges, buildings and equipment, cut apart and free from riveted material.
40 Structural wrought iron uncut—Wrought iron from bridges, structures and equipment which has not been cut apart.
41 Structural steel, uncut—All steel or steel mixed with iron from bridges, structures and equipment that has not been cut apart; may include uncut bolsters, brake beams, steel trucks, under frames, channel bars, steel bridge plates, frog and crossing plates and other steel of similar character not included in No. 2 heavy melting steel, Class 32.
42 Sheet scrap No. 1—Under ¼ in. thick, consisting of cut stacks and stack netting, hoops, band iron and steel, pressed steel hand car wheels, scoops and shovels (free of wood) and wire rope; must be free from galvanized iron or tin, cushion and other similar springs and lime encrusted pipe and flues from boilers.
43 Sheet scrap No. 2 and miscellaneous—Includes netting, other than stack wire, all galvanized or tinned material, composition brake shoes and gas retorts, and any other iron or steel material not otherwise classified.
44 Spring steel No. 1—Flat spring steel, including elliptic springs from which bands have been removed.
45 Spring steel No. 2—All coil springs, made from steel 3/16 in. and over.
46 Manganese steel—To include all kinds of manganese rail, frogs and switch points, cut or uncut.
47 Steel, high speed—High speed steel turnings (butts and ends report separately).
48 Tires No. 1—All locomotive or car tires 36 in. and over inside diameter, smooth inside, not grooved for retaining rings or lipped.
49 Tires No. 2—All tires not included in tires No. 1.
50 Turnings and drillings No. 1—Wrought iron and soft steel, clean, free from cast borings, brass, hard steel or other foreign metals, dirt and lumps.
51 Turnings and drillings No. 2—From tires and other similar steel, including hard steel; clean, free from other metals, dirt and lumps.
52 Turnings and drillings, mixed, No. 1—Wrought, cast and steel mixed, free from other metals, dirt and lumps.
53 Turnings and drillings, mixed, No. 2—Wrought, cast and steel, mixed with brass and other metals, free from dirt and lumps.
54 Wheels, No. 1—Includes all solid cast iron car and locomotive wheels; no allowance for grease and dirt.
55 Wheels, No. 2—Includes all kinds of built-up or steel-tired wheels (specify kind in offering).
56 Wheels, No. 3—Includes all solid rolled, forged or cast steel car and locomotive wheels (specify kind in offering).
57 Wrought, railroad No. 1—Clean wrought, pieces 6 in. long and over, flats to be ¼ in. thick and over; rounds or squares ⅜ in. thick and over; to include bars, rods, chain; all to be free from riveted material.
58 Wrought, railroad No. 2—All wrought under 6 in. long, not specified under No. 1 railroad wrought; to include track spikes, bolts, nuts, rivets and lag screws.
59 Wrought iron locomotive frames or mud rings—Includes all other large wrought iron forgings.
60 Destroyed steel cars and locomotive tenders—Includes underframes and bodies of steel cars cut apart sufficiently to load—excluded trucks and cast steel underframes.

Miscellaneous

61 Aluminum.
62 White metal No. 1—Including various mixtures of clean bearing or lining metals, such as babbitt, metallic packing, etc.
63 White metal No. 2—All non-bearing white metals, exclusive of aluminum.
66 No. 1 brass—Locomotive bearing metal, such as driving, crown and rod brass, free from white metals, excluding car and tender bearings.
67 No. 2 brass—Steam metal brass, including valves and fittings, injector and lubricating bodies and parts and check valves.
68 No. 3 brass—Journal bearings free from babbitt.
69 No. 4 brass—Brass or bronze borings, drillings and turnings.
70 No. 5 brass—Yellow brass castings, to include coach trimmings, light brass, hose couplings, pipe, tubes, etc.
71 Copper cable, insulated—Specify kind.
72 Copper, No. 1—Wire free from insulation, flue ferrules, pipe and tubes.
73 Copper, No. 2—Sheet copper, sheathing and roofing, free from paint and nails.
74 Copper, No. 3—Sheathing and roofing copper, with paint and nails.
75 Copper, No. 4—Battery copper.
76 Copper, No. 5—Dross and oxide (report separately).
79 Lead—Sheet, pipe, etc.
80 Lead—Battery.
81 Lead—Battery mud or sediment (specify wet or dry).
91 Zinc—Battery or sheet (specify kind).

CONTENTS

ESTABLISHED 1855

THE IRON AGE

EDITORS:

A. I. FINDLEY WILLIAM W. MACON GEORGE SMART

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Kicking Against the Goads

Mr. Gompers, in his favorite impersonation of Ajax defying the lightning, spoke with some violence this week on present industrial conditions, at the Atlantic City meeting of the American Federation of Labor. "We are going to fight to our utmost the reduction of wages," he said. He denied that the cost of living had come down, though official statistics have shown a substantial reduction in the past year. "Instead, it is going up, especially rents." It is true that in many cases rents are being advanced even now. It must be said, however, that the main cause of higher rents is that the supply of houses, generally speaking, falls short of meeting the demand, and that condition in turn is due largely to the fact that some scores of thousands of union workers in the building trades prefer idleness to accepting such a reduction in wages as would encourage the building of more houses. Attention has been called repeatedly to this phase of the unemployment situation which is brought home daily to millions of workers, either in the high rents they pay or in the entire cutting off of income because the union has decided that no pay envelope at all is preferable to a pay envelope of less than war-time proportions.

"In all this talk about readjustment and reconstruction," says Mr. Gompers, "why is it that the pressure is always brought to bear upon those whose standards of life and everyday existence would be demoralized by a reduction in wages, and why this drive to reduce wages first? Would it not be more humane to start with 'them as have' and whose profits or incomes derived from their surplus savings would be the only factor affected? The question is between profits in dollars and the demoralization and deterioration of the American wage earners' standards."

The record of dividends reduced or passed by industrial companies in the past nine months has suggested that the order has been just what Mr. Gompers would have it—the cutting down of profits and then reductions in wages. That has been the order throughout the steel industry. Profits have disappeared and scores of important producers are writing a loss on every day's operations. And if the list of sufferers from the suspension or cutting down of dividends were analyzed it would be found that in ninety cases out of a hundred the losses are falling upon investors with small or moderate incomes, whose hardship in kind, and in many cases also in degree, is like that of the worker whose wage has been reduced.

It may be recalled that in November, 1918, when the country faced the maze of problems resulting from the armistice, Mr. Gompers announced in an address at Laredo, Tex., that "the advantages which the workers of America and the allied countries have gained are not going to be taken away from us, and we will resist the attempt to the uttermost." He referred to the eight-hour unit in figuring overtime, also to the high rates of wages that were the gift of the war. At that time it was said in these columns that war commodity prices and war wages must be deflated and that Mr. Gompers could no more successfully resist the forces that would bring about these changes than he could control the rise and fall of the tides or the precession of the equinoxes. The record of his success has been written in the months that have elapsed. He has been no more able in the past year to hold wages at the war level than he could hold wheat at $2.30, or ship plates at $95.20 per gross ton.

The forces at work have been economic forces and not decrees of any labor union or manufacturer or government. Moreover, forces beyond any such control are still at work. They are world-wide in their operation. "The economic crime," as Mr. Gompers calls the "forcing into idleness" of several million workers, is not the conspiracy he conceives it to be. Rather the economic crime was the forcing of the labor cost of production, which was also the cost of living, beyond the power of consumers to endure it. To the reparation every member of the community is contributing.

One of the surprises of the abnormal course of steel production the world over this year is the performance of the electric furnace in Canada. Out of a total output of steel castings of 12,639 gross tons for the first half, 75.8 per cent or 9585 tons was made in electric furnaces. On Jan. 1 Canada had only 43 electric steel furnaces as compared with 356 in the United States. The best

record ever made by American electric furnaces producing steel castings was in 1920 when almost 12.5 per cent of the total was electric. The best previous Canadian record was in 1919, when about 18 per cent of the total steel casting output was from electric furnaces. Of interest also is the fact that in June the Canadian electric steel ingot production of 1353 tons was over twice that of the United States in July—575 tons. Even the American output for June, 1476 tons, was but slightly in excess of the same month's output in Canada. Seeing that Canada has only about one-eighth as many electric furnaces as the United States, this performance is noteworthy.

The Traffic Problem

While there is a great deal of talk about what the public needs in freight service and what the railroad companies need in earnings, it does not appear that the full extent of the traffic problem is appreciated. A little analysis on the quantitative basis may be illuminating. Demand for various commodities rises and falls quite irregularly, though the general trend in nearly all commodities is upward. Representing in a sense the sum total of all demand for commodities, the demand for transportation service moves with relative smoothness. Almost any comparison that can be selected shows that from almost the earliest time in American railroading the freight ton-mileage on the railroads has tended to double every 12 years. Not going into details, it is sufficient here to point out that the revenue ton-mileage in the fiscal year ended June 30, 1913, was 301,398,752,108, also that the movement in 1901 had been a trifle less than one-half and the movement in 1902 a trifle more than one-half of this amount, so that there was a doubling in a shade less than 12 years.

The rate represents an annual increment of 5.95 per cent. Such an increase, from 1913, would involve in the twelvemonth to end June 30, 1922, on which period we have already entered, a movement of 507 billion ton-miles, or 68.2 per cent more than that of 1913. The railroads cannot closely approach such a rate now or in the near future, and they cannot come at all near it with any degree of comfort or convenience to shippers. In 1918, under forced conditions, and with some long movements to use certain lines, thus piling up ton-miles, they did about 400 billion, while in 1920, with consignees very greatly incommoded, they did only a shade better.

Last May the quality of service rendered by the railroads was comparatively good, and the rate of movement was just equal to the movement in 1913. Two conclusions can readily be drawn: (1) That with anything like normal business conditions the demand upon the railroads would be much greater, perhaps closely approaching the 507 billion ton-miles computed according to the old rule; (2) That the railroads could not possibly perform anything like the quantity of service demanded by active industrial conditions, even by moving the freight irrespective of the convenience of shippers and consignees.

To a great many the conclusion to be reached from the facts here referred to is that by this means or that means sufficient improvement in railroad capacity must be forced to meet the indicated conditions. That dictum, however, cannot be granted in full. As a people we cannot accept the burden of doubling every 12 years the quantity of freight movement on our railroads, for obviously we should eventually break under the strain. After liberal allowance for improvements and economies that may be introduced the supply of capital and man power would not increase rapidly enough to carry the pace.

As a part of the transportation problem, whether we accept it intelligently or have it forced upon us, is the necessity of curtailing our requirements or diverting some of the demands from the railroads. Of course this will have to come about through the force of self-interest, but there are some means available for influencing self-interest. When water transportation is available as an alternative, there can be some recession from the principle so often preached that the railroads must make rates that will compete. We have reached a point where much more is requisite than a mere increase in railroad facilities. Should we depend alone on that our trouble would be endless.

Steel Makers as Coke Sellers

Not only are the steel companies making the market in pig iron, but they threaten to become the dominating influence in the coke market, at least temporarily. This possibility is suggested by the fact that a Youngstown district steel company, which recently blew in a blast furnace, contracted for its fuel requirements from a nearby steel company having by-product ovens. This company formerly bought beehive coke for its furnaces, as it probably would be doing now if business were normal and the steel companies having by-product plants were using all the coke they produce. The lowest price quoted by the Connellsville operators against the inquiry, which was for about 12,000 tons a month over the remainder of the year, was $3 per net ton at ovens. The buyer was able to get by-product coke at $2.50 per net ton, Connellsville base, a saving of 50 cents per ton, or $6000 per month. It is necessary to keep by-product plants in partial operation at all times to prevent heavy repair charges, and there are also in some cases gas contracts, and the steel companies in the Youngstown district, and probably in all other districts, which have by-product plants, are producing more coke than they need, since they have only one blast furnace in five on an average making iron.

It was the marketing of surplus pig iron by the steel companies that established market prices in steel-making grades of iron, and now that the steel companies have surplus by-product coke for sale and the capacity for commercial production, the beehive coke producers have a condition to meet that may have to be reckoned with for a considerable time. The fact that many merchant blast furnaces stopped making iron did not prevent prices from slipping, and likewise the curtailment of beehive coke making has its limitations as a price corrective, seeing that the steel

companies must keep their by-product plants going and will take low prices for coke to prevent burdensome accumulations.

Adding Silicon to Basic Steel

Deterioration of steel due to mistaken judgment as to the proper time and method of adding silicon has been the subject of experiments by a German investigator, as summarized elsewhere in this issue. His work was on basic open-hearth steel. He concludes that by adding the ferrosilicon at as late a stage as possible, not only are the silicon losses and silica inclusions less, but also the carbon monoxide in the steel is greatly reduced, as well as the hydrogen content. Still more important is his conclusion that the amount of discard in rolling the steel, due to the presence of occluded gases, is reduced over 50 per cent by late additions of the silicon alloy. The results show a discard as high as 70 per cent when silicon is added at the usual time, whereas by a late introduction of the silicon discards ranged from 9.80 per cent to 18 per cent.

It is true that the steel under consideration contained from 0.20 to 0.22 per cent final silicon, which is not usual in American practice; but if the author's conclusions are true regarding such steel, they must have some weight in the production of steel containing less silicon. At any rate the points the author raises merit close consideration from producers of basic open-hearth steel castings, where the final silicon content is usually at a minimum of 0.25 per cent and where gas content and consequent blow holes are some of the chief defects to be avoided. And the matter is equally vital if rolling discard losses can be cut in two by proper additions.

These experiments emphasized the growing necessity of giving more attention to the time and method of making additions of all alloys. In many plants ferrosilicon is not added to the steel under the conditions laid down by the German investigator. There is also a wide divergence of opinion as to when and how ferromanganese should be added. Time of addition, temperature and other considerations in adding all alloys deserve careful research, which will no doubt reveal some facts not now known.

CORRESPONDENCE

New Car Wheel Specifications and Southern Charcoal Pig Iron

To the Editor: The tentative specifications for cast iron car wheels adopted by the American Society for Testing Materials at its 24th annual meeting, as reviewed by THE IRON AGE of June 30, work a severe hardship to the Southern pig iron manufacturer, in that they eliminate Southern pig iron almost entirely by lowering the phosphorus maximum. Time was, when the large as well as the small producer of wheels, was content with a maximum phosphorus specification of 0.55 per cent, sulphur, 0.035 per cent and under, with silicon all the way from 0.75 to 2.75 per cent, depending on the other ingredients of the individual mixture.

Dr. Moldenke saw the injustice these new specifications would work to the Southern product, when he raised the point that Southern melters could not meet these figures, since their product contains phosphorus around 0.50 per cent.

Let us go back to 1913, the year in which Mr. Force states that the total loss sustained by the railroads, due to accidents of all kinds, amounted to approximately $33,000,000, as compared with $106,000,000 for the year 1919, which increase, it is admitted, is due in a large measure to defective wheels. In 1913 one Southern charcoal iron manufacturer shipped 53 per cent of his output to the railroads and car wheel manufacturers, while in 1919 only 16 per cent went to this same trade.

Recent investigation developed that some of the wheel manufacturers, in order to meet the views of the railroads as to price, were resorting to the use of higher phosphorus iron of the ordinary No. 4 foundry grade, increasing the percentage of steel scrap and adding ferromanganese. It is small wonder that the scrap wheel of to-day, which constitutes a goodly percentage of the manufacturer's mixture, has accumulated phosphorus, sulphur and combined carbon in such quantities as to lower materially the former high standard of efficiency of the wheel.

A close inspection of the tables submitted by Mr. Force reveals the fact that in practically every case where failure appears to be attributable to high phosphorus content, either the combined carbon or sulphur content or both were excessive. Then why should the Southern pig iron manufacturer, the Southern and Pacific Coast wheel maker be eliminated until it can be established that phosphorus is responsible for wheel failures?

If wheels could be made in 1913, that would give the maximum service without the aid of the electric furnace or the addition of nickel and chromium, they can be made in 1921 without these agencies. Meanwhile railroads have been hammering the shipper to load freight equipment heavier, insisting that cars be loaded 10 per cent over their marked capacity in order to make the supply take care of the demand during a prosperous period, thus increasing the strain on the most vital part of the equipment, the wheel. They have resorted to the cheaper wheel; and thus it is we have a condition that cuts both ways—reduced wheel efficiency combined with increased maximum loads.

Let's agree with the author of "Some Failures of Chilled Cast Iron Wheels" in the statement, "By no means are the car wheels as a whole satisfactory," and get at the root of the trouble before we reach a conclusion that operates against the best interests of any special section of the United States.

J. G. HENDRICK,
Shelby Iron Co.

Shelby, Ala., Aug. 19, 1921.

Training in Economics as Preparation for a Business Career

To the Editor: THE IRON AGE for Aug. 11 contains a letter by Sterling H. Bunnell commenting upon an article by Alvan T. Simonds, president of the Simonds Saw Mfg. Co., Fitchburg, Mass., in which he raises the question "Should Business Men Be Licensed?"

Mr. Simonds prepared his article because he recognized a condition among American business men that I have seen nowhere better stated than in Mr. Bunnell's letter as follows:

> Since the close of the war in 1918 it was perfectly evident to the very few men who were willing to think in international terms and study world conditions, that a huge financial crisis was impending. However, a search of the printed records of the past three years shows only two names, Richard Martens and Frank A. Vanderlip, who were conspicuous for their bold telling of the truth about the economic situation. The vast majority of recognized successful leaders of trade and industry in the United States are, on the contrary, on record repeatedly up to within twelve months of this writing, as predicting unlimited prosperity, continuance of industrial activity, vast profits, and higher and higher prices for American commodities demanded by all the world; and this in spite of the fact that all of the nations engaged in the late World War were financially exhausted, and operating their governments at enormous deficits.

Mr. Simonds believed from his own experience and study that what was "perfectly evident to very few" might be made evident to the many by proper educa-

tion; or at least that the many might be taught to respect and follow the opinions of the few who had taken the time and trouble to get the proper education. Most men respect and take the advice of skilled physicians because they believe that there is a science of medicine back of them. Most business men neglect or ridicule the advice of skilled economists (and I mean by this skilled both by study and experience) because they have failed to recognize that there is such a thing as a science of economics. Mr. Simonds believed that with such education many business failures, with the consequent loss of money and the bringing of great hardship upon many families of employees, might be avoided to a much greater extent than it is to-day.

During the first six months of 1921 there were over 9000 business failures in the United States, involving an indebtedness of over $300,000,000. In the light of these facts the failures for February, 1921, do not stand out as so unusual. It should be remembered in this connection that the failures show only a small part of the losses occasioned by ignorance of the fundamental laws of economics—and the word is used here to mean the study of material means to satisfy human desires. Greater losses than those represented by the failures occurred in connection with businesses that did not fail because of their financial condition or because of being bolstered up by friends or banks.

Mr. Simonds is not a believer in Government regulation. He is an individualist and few business men would go further than he does in giving freedom for individual initiative. Realizing, however, how far the Government has interfered to protect property, he raised the question that if this principle is good, why should not business men be licensed, who direct the use of other people's money and who determine by their success or failure the happiness or misery of many families of laborers, before such men are allowed to undertake such a trust. He did not mean the small man running a fruit stand, but only those who work with large capital and direct large numbers of employees.

Mr. Simonds did not want "to start something." He wanted to create public sentiment in favor of education in economics, so that the condition described above by Mr. Bunnell would gradually cease to exist.

He believes "world wide depressions" and "stock panics" are caused by the ignorance, weakness and foolishness of human beings and are not "acts of God" save as every act of human beings may be called an act of God. Depressions and stock panics differ from earthquakes and the floods that usually follow them, because human beings can prevent the former by proper education and experience rightly understood. Education here does not mean only book education; scarcely anyone so understands education to-day. Mr. Simonds believes that most of the business men (as Mr. Bunnell says, "this includes the vast majority of recognized successful leaders of trade and industry in the United States,") who did not foresee the condition that followed the armistice would foresee such a condition twenty years from now, if they were living and in business and we had just passed through another world war. A study of the years following our Civil War and the Napoleonic wars should have made American business men understand these conditions in 1919 and 1920. A very few did "see perfectly," as Mr. Bunnell says. Mr. Simonds was one of these. In the house organ of the Simonds Saw Mfg. Co. in March, 1920, he called the attention of the employees of the company to his belief that October of 1920 would see many of them out of employment and that a similar condition would exist in most businesses in the United States.

Mr. Simonds says: "Let us have such education in our schools and colleges that the many may be better able to see as the very few saw in the last two or three years."

JOHN G. THOMPSON,
Assistant to the President
Simonds Mfg. Co.

Fitchburg, Mass., Aug. 15, 1921.

[In a note accompanying the above, Mr. Thompson says that he is writing in Mr. Simonds's absence on his vacation.—EDITOR.]

Proposal to License Business Men

To the Editor: The proposal of Alvan T. Simonds in your issue of July 14 is very interesting, particularly as I myself have raised that very question among our own members in my discussion of business conditions at our regional meetings. There is no doubt in my mind but that society as a whole cannot afford the waste of capital caused by incompetent management of business.

I myself have used the same illustration as Mr. Simonds, that inasmuch as navigation insists on licensing its ships' officers, so business should insist on licensing its managers. Just as ships' officers must demonstrate their ability in service, and must have a certain education as well before they can secure their license, so business captains using other people's money in their ventures, or managing business ventures for other people, should be licensed.

The competitive capitalistic system is greatly criticised for its deficiencies. Those of us who believe that there is no other system possible would do well to make every necessary improvement in the present system. Unless the deficiencies of the system are removed, we may find enough sentiment aroused among the unthinking and ill-informed to try something entirely different. I believe it would be a calamity, but if it should come about it will be due to the inertia of men who ought to be improving the present system.

Profound ignorance of fundamental economic laws and their operations has recently put a number of large concerns on the rocks. Some of them have not yet reached the bankruptcy court, but some of them surely will; and perhaps more are headed the same way than the public may suspect. The loss to stockholders is the same whether it is caused by ignorance or by criminal looting. The ordinary stockholder cannot know that the management of his property is in incompetent hands until the final crash demonstrates that fact, and perhaps his property is picked up by financial beach combers.

The corporation is a creature of the law. Those using the corporate form of organization use a power conferred upon them by the State. Is it too much to ask of all those operating as corporations created by law first to demonstrate their qualifications, and their character, before they are allowed to use this public power? Under the corporate form they secure many advantages, not the least of which is the size that a venture can grow to. This being possible only by special action, that permits the managers to gather large sums together from the public, certainly the public could well demand that the management of public money gathered into corporations shall be in the hands of men who presumably are able to guard properly the funds intrusted in their care.

Many a man will rise up and say that this is unwarranted interference, but let him just look around and see the wreckage that even now is strewing financial shores. Let him look back over the days of the Rock Island, the New Haven, C. H. & D. deals, and see whether something more than honesty is not necessary. A well-intentioned fool should not be allowed to control business craft any more than he should be allowed to navigate a ship on the high seas.

E. F. DUBRUL,
General Manager, National Machine Tool Builders' Association.

Cincinnati.

Improved Industrial Outlook in Milwaukee

MILWAUKEE, Aug. 22.—Reviewing the important local industries manufacturing motor vehicles and parts, the current review of the First Wisconsin National Bank says: "Most firms in automobiles and allied lines, except trucks, report improvement both in current sales and forward business. Capacity of operations averages around 60 per cent, with one firm making automobile specialties (drop forgings) operating at full capacity, 24 hr. a day. Automobile bodies are in fair demand. Prospects for motorcycle business in August and September are good. Prices in automobile lines are believed to be close to the bottom.

Iron and Steel Markets

USING UP STEEL STOCKS

Consumers in the Market in Larger Numbers

Improvement in Pig Iron Maintained—Increase in Output Expected

The hope of the steel trade that the fall will bring a noticeable increase in buying amounts to something less than confidence as yet, but there are indications of slowly expanding demand for some forms of finished steel. The best basis for better expectations is an increase in the number of orders coupled with a more urgent call for early delivery.

Producers of steel see more signs of the using up of stocks that have long stood between them and anything more than a hand-to-mouth operation, and are encouraged to look for a gradual decrease in the scale of their losses.

That the Steel Corporation followed more promptly the last wage reduction of the independent companies than those coming earlier in the year is an indication of the effect of recent competition. It will take a considerable increase in operations to give any approach to economical production.

The rate of steel ingot production is slightly larger this week at several important plants. In the Chicago district the Wisconsin Steel Co. shows the most marked improvement, running at 40 per cent of capacity.

Central Western mills find more activity in automobile steel than in any other direction. Several Detroit plants will operate at the present rate through September. The Ford Motor Co. placed 2500 tons of light plates at Youngstown and a like amount went to another mill.

There are signs of increased activity at some implement works, but one farm tractor company has reduced production.

The sheet market is more active, some buyers making their first purchases in months. Base prices on blue annealed range from 2.25c. to 2.40c. and on black sheets from 2.75c. to 3c. Offerings of stock tin plate have been made at $4.50 per box, or 75c. below the price for production plate.

The week has been an outstanding one in fabricated steel. Upward of 12,000 tons was placed and nearly 20,000 has been added to active pending projects, not including 14,000 tons for the Federal Reserve Bank in New York. Railroad bridge and building work is conspicuous for its absence.

Railroads continue to place car repair work. An Illinois Central contract is for the repair of 1400 box and gondola cars. Western roads are in the market for locomotive forgings and car axles. For repair work in its own shops the Burlington will buy 2200 tons of plates and shapes.

Bar iron is about $1 per ton lower in the Eastern market, being now quoted at 1.65c., Pittsburgh.

Light rails, 25 to 45 lb., have declined about $2 per ton under recent competition.

The pig iron market has held the improvement of last week, considerable sales being reported at 50c. or more above recent low prices in some districts, while in other cases business was closed at prices quoted a fortnight ago. In the Central West foundry iron shipments in August have been from a third to 50 per cent larger than in July.

The appearance of an inquiry at Chicago for 40,000 tons of pig iron for India naturally caused comment, but there is no expectation that any part of it will be bought in this country.

Further Chicago sales of 50 per cent ferrosilicon have been made at concessions, the low prices having been made by Canadian producers in view of their advantage in the exchange situation.

Tentative inquiries for coke have been made by several blast furnace companies in the Central West which have considered blowing in. The Carnegie Steel Co. will start another furnace at Youngstown, but will blow out one in the Pittsburgh district. A Cleveland furnace and one at Columbus are to go in early in September and there are other indications of slightly increased pig iron production in the fall.

Prices of old material grow firmer on any appearance of consuming demand; but the market is still largely in the hands of dealers.

Recent concessions by one producer of Lake Superior iron ore have not changed the prices of other sellers. A Canadian steel company that thus far has received no 1921 ore on its contracts will now begin to ship and may take a total of 250,000 tons.

Pittsburgh

PITTSBURGH, Aug. 23.

Demand for steel continues to reflect a lack of confidence on the part of consumers that prices now current will hold any considerable length of time. While orders in a general way still are gaining in number they do not increase in size, and in all cases prompt shipment is demanded. Buyers merely are taking on such supplies as will meet their immediate requirements, and about the only encouraging feature to the demand is the fact that it comes from widely scattered sources and also that there is insistence on early deliveries. This indicates plainly that the consumers' stocks are pretty low, but only here and there are plant operations discernibly greater than they have been and if anything the question of prices is more prominent now than it was last week and the week before.

The action of the Steel Corporation in receding to the independent company wage scales encourages the hand-to-mouth purchasing policies of buyers because they feel that further reductions on the part of the independent steel companies are likely. Such an idea does not find much support among steel manufacturers in general because it is held that 30c. an hour carries common labor to a point that cannot fail to put it into debt on current living costs and a great many workmen on present operations are not getting in more than three or four days a week. It is estimated that unemployment in the Pittsburgh district now is a matter of 60,000 workmen. Buyers, however, seem interested only in getting prices down and are not greatly concerned as to how such a condition is brought about. Present prices are badly out of alignment with costs and it is declared that even with common labor at 25c. an hour, as it is in some mill towns where living costs

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	Aug. 23, 1921	Aug. 16, 1921	July 26, 1921	Aug. 24, 1920
No. 2X, Philadelphia‡	**$20.84**	$20.34	$21.35	$53.35
No. 2, Valley furnace†	**20.00**	19.50	19.50	50.00
No. 2 Southern, Cin'ti†	23.50	23.50	24.50	45.60
No. 2, Birmingham, Ala.†	19.00	19.00	20.00	42.00
No. 2, foundry, Chicago*	20.00	20.00	18.50	46.00
Basic, del'd, eastern Pa.	19.00	19.00	21.25	48.30
Basic, Valley furnace	18.00	18.00	19.00	48.50
Bessemer, Pittsburgh	21.96	21.96	22.46	49.90
Malleable, Chicago*	20.00	20.00	18.50	46.50
Malleable, Valley	20.00	20.00	20.50	50.00
Gray forge, Pittsburgh	21.46	21.46	21.46	50.40
L. S. charcoal, Chicago	33.50	33.50	36.00	57.50
Ferromanganese, del'd	70.00	70.00	70.00	170.00
Rails, Billets, etc., Per Gross Ton:				
Bess. rails, heavy, at mill	$45.00	$45.00	$45.00	$55.00
O.-h. rails, heavy, at mill	47.00	47.00	47.00	57.00
Bess. billets, Pittsburgh	*29.00*	30.00	30.00	60.00
O.-h. billets, Pittsburgh	*29.00*	30.00	30.00	60.00
O.-h. sheet bars, P'gh.	*30.00*	32.00	32.00	68.00
Forging billets, base, P'gh.	*34.00*	35.00	35.00	80.00
O.-h. billets, Phila.	35.74	35.74	35.74	64.10
Wire rods, Pittsburgh	42.00	42.00	42.00	75.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh., lb.	1.75	1.75	1.90	3.25
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	*2.00*	2.05	2.10	4.75
Iron bars, Chicago	1.75	1.75	1.85	3.75
Steel bars, Pittsburgh	1.75	1.75	1.75	3.25
Steel bars, New York	2.13	2.13	2.13	4.02
Tank plates, Pittsburgh	1.80	1.80	1.80	3.25
Tank plates, New York	2.18	2.18	2.18	3.52
Beams, etc., Pittsburgh	*1.80*	1.85	1.85	3.10
Beams, etc., New York	*2.18*	2.23	2.23	3.37
Steel hoops, Pittsburgh	2.25	2.25	2.50	5.50

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Aug. 23, 1921	Aug. 16, 1921	July 26, 1921	Aug. 24, 1920
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	*2.75*	3.00	3.00	7.50
Sheets, galv., No. 28, P'gh.	*3.75*	4.00	4.00	9.00
Sheets, blue an'l'd, 9 & 10.	2.25	2.25	2.40	6.00
Wire nails, Pittsburgh	2.75	2.75	2.75	4.25
Plain wire, P'gh	2.50	2.50	2.50	3.75
Barbed wire, galv., P'gh.	3.40	3.40	3.40	4.45
Tin plate, 100-lb. box, P'gh.	$5.25	$5.25	$5.50	$9.00
Old Material, Per Gross Ton:				
Carwheels, Chicago	$13.00	$13.00	$12.50	$39.00
Carwheels, Philadelphia	**17.00**	16.00	16.00	41.00
Heavy steel scrap, P'gh.	13.00	13.00	12.00	29.00
Heavy steel scrap, Phila.	11.50	11.50	11.00	26.00
Heavy steel scrap, Ch'go.	**11.00**	10.75	10.00	25.50
No. 1 cast, Pittsburgh	**16.50**	16.00	16.00	42.00
No. 1 cast, Philadelphia	17.00	17.00	17.00	40.00
No. 1 cast, Ch'go (net ton)	13.00	13.00	11.50	36.00
No. 1 RR. wrot, Phila.	14.00	14.00	13.50	33.00
No. 1 RR. wrot, Ch'go (net)	11.00	11.00	9.00	24.50
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	$2.75	$2.75	$2.75	$17.50
Foundry coke, prompt	3.75	3.75	4.00	19.00
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	12.00	12.00	12.50	19.00
Electrolytic copper, N. Y.	11.75	11.75	12.25	19.00
Zinc, St. Louis	*4.17½*	4.20	4.25	8.10
Zinc, New York	*4.67½*	4.70	4.75	8.45
Lead, St. Louis	4.25	4.25	4.35	8.75
Lead, New York	4.40	4.40	4.40	9.00
Tin, New York	26.12½	26.12½	26.00	45.50
Antimony (Asiatic), N. Y.	4.50	4.50	4.65	7.00

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price, Aug. 23, 1921, Finished Steel, 2.321c. per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

These products constitute 88 per cent of the United States output of finished steel.

Aug. 16, 1921,	2.364c.
July 26, 1921,	2.364c.
Aug. 24, 1920,	3.974c.
10-year pre-war average,	1.684c.

are low and freight rates substantially lower, not much excuse exists for lower prices than now prevail.

However, all manufacturers are not giving close attention to costs, or at least are not letting them influence their price ideas, and the past week has seen recessions in a number of finished products, notably in sheets. The week also has developed lower prices in semi-finished material, while the effect of the recent advances in asking prices of pig iron has been to halt new buying. Releases against unshipped tonnages of foundry iron are more numerous, but some difficulty is experienced in getting buyers to advance their bids to the ideas of producers.

Pig Iron.—A Pittsburgh district steel maker has just closed for 2000 tons of basic iron on a basis of $19, Valley furnace. This iron is to be shipped from a furnace outside the Valley district and the sale cannot be considered as having established the Valley furnace price. Last business done from any of the Valley furnaces was at $18 and while all makers in that district now are asking $20 for this grade, this price has not yet been established by a clear-cut sale. There are no important inquiries for basic now before makers. The market on Valley Bessemer iron still is quotable at $20, at which price a few moderate sized lots have changed hands. New business in foundry iron has been altogether in small lots, but there no longer is much iron of this grade available and $20, Valley furnace, is as low as any can be bought for, while one maker is unwilling to consider less than $20.50 for No. 2 grade. It is reported that the matter of blowing in several furnaces, now idle, is under consideration. Among the furnaces mentioned as likely to be put on the active list before long are those of the A. M. Byers Co., Girard, Ohio; the Trumbull-Cliff furnace, a new stack jointly owned by the Cleveland-Cliff Co. and the Trumbull Steel Co., Warren, Ohio; one of the Shenango Furnace Co. stacks and the Cherry Valley furnace, Leetonia, Ohio. While coke inquiries have been put out against the probable relighting of some of these furnaces, the matter at present is merely in the tentative stage in all the cases. The only change in the line-up of active furnaces is that the Carnegie Steel Co. has put on one furnace at its Ohio works, Youngstown, and has withdrawn the blast from one of its Carrie furnaces, Rankin, Pa. It seems that more iron was being melted than made at the Ohio works and since the extra iron was coming from Pittsburgh, a considerable saving in freight was affected by turning the blast on in one of the idle Ohio furnaces.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.96 per gross ton:

Basic	$18.00 to $20.00
Bessemer	20.00
Gray forge	19.00 to 19.50
No. 2 foundry	20.00 to 20.50
No. 3 foundry	19.50 to 20.00
Malleable	20.00

Ferroalloys.—A rather determined effort is being made by domestic producers of ferromanganese to boost the price of 78 to 82 per cent material to $75, delivered, but such business as has been done has been at $70, at which price we note one sale of 100 tons. Some makers are asking $73 delivered for 76 to 80 per cent alloy but consumers claim to have been offered this grade as low as $65. The Valley steel maker who recently asked for 200 to 300 tons of 80 per cent material for September and October shipment has not yet covered. British ferromanganese is quoted at $60 to $65 c.i.f. Atlantic seaboard, but is not being pressed for sale. British makers evidently are waiting definite action on the

tariff before aggressively going after business. Little interest is apparent on the part of consumers in spiegeleisen, which is quoted by an Eastern maker at $26 furnace, for 19 to 21 per cent material, and by another with furnaces in western Pennsylvania at $29 for 18 to 22 per cent manganese content. Despite efforts by some makers of 50 per cent ferrosilicon to get at least $65 furnace, freight allowed, the market is not quotable above $60 on sales. Demand is limited and competition for passing orders is sharp.

We quote 78 to 82 per cent domestic ferromanganese at $70 delivered; 76 to 80 per cent $68; 76 to 80 per cent British ferromanganese, $60 to $65, c.i.f. Atlantic seaboard. We quote average 20 per cent spiegeleisen at $26 furnace; 16 to 19 per cent, $25; 50 per cent ferrosilicon, domestic, $60, furnace, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, $36.50; 11 per cent, $39.80; 12 per cent, $43.10; 13 per cent, $47.10; 14 per cent, $52.10; silvery iron, 6 per cent, $25; 7 per cent, $26; 8 per cent, $27.50; 9 per cent, $29.50; 10 per cent, $31.50; 11 per cent, $34; 12 per cent, $36.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is $4.06 per gross ton.

Billets, Sheet Bars and Slabs.—There is some inquiry for sheet bars but actual sales are of rather moderate tonnages, and buyers seldom find it necessary to go as high as $32 Pittsburgh. The common basis is $30, f.o.b. makers' mill. Four-inch re-rolling billets are reported at $29 and on sales cannot be quoted above $29.50, though $30 still is asked. Hardly enough demand is coming out for slabs to establish prices. The quotation is $31, but it is doubtful if more than $30 could be obtained except for retail lots.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $29 to $30; 2 x 2-in. billets, $30; Bessemer and open-hearth sheet bars, $30; slabs, $30 to $31; forging billets, ordinary carbons, $34 to $35, all f.o.b. Youngstown or Pittsburgh mills.

Wire Rods.—Demand still is extremely limited but apparently production is being gaged by consumption and there are no surplus tonnages to weigh down prices. Occasionally small lots are sold from makers' yards at around $40 for common soft steel, but on new rollings nobody is disposed to go below $42 Pittsburgh. However, an inquiry of a size that would provide a real test of the price is lacking. Prices are given on page 498.

Structural Material.—Actual orders in fabricated steel are still of small proportions, both individually and in the aggregate. Some projects, the original inquiries against which went out as far back as a year ago, are coming to life, but these are merely providing work for the estimating departments rather than the shops of the fabricators. The McClintic-Marshall Co. recently entered 250 tons for the municipal electric light plant in Ashtabula, Ohio, and 800 tons for school No. 54, Brooklyn, N. Y. On the small lots of plain material that are being placed there is not much cutting from 1.75c. for bars and 1.80c. on plates and shapes, but it is reported that protection has been given against round tonnages on pending projects, down to 1.65c., and quotations of 1.70c. to 1.75c. have been fairly common on prospective business. Prices are given on page 498.

Iron and Steel Pipe.—Orders for standard pipe in both steel and wrought iron still are gaining but there is no perceptible increase in the demand for oil country goods, nor in line pipe, and in a general way there is so much room for improvement that few are inclined to believe that business is definitely on the upgrade. August is proving a better month than July, but the improvement is found in shipments rather than in plant operations. Prices are pretty well maintained on standard pipe but there is not quite so good observance of quotations on oil country and line pipe. Discounts are given on page 498.

Iron and Steel Bars.—Considerable talk continues that less than 1.75c. is being done on soft steel bars and it is indeed possible that if a sizable inquiry were before makers, less than this price could be done, but there is a dearth of other than small lot inquiries and on such tonnages as are wanted there is no important deviation from the regular market base. Orders for iron bars are more numerous but they run entirely to small lots.

We quote steel bars rolled from billets at 1.75c.; reinforcing bars, rolled from billets 1.70c. to 1.75c. base; reinforcing bars rolled from old rails, 1.60c. to 1.75c.; refined iron bars, 2.25c. in carloads, f.o.b. mill, Pittsburgh.

Nuts, Bolts and Rivets.—The market still is dull and settled, with no very definite basis of prices. Quotations made by makers in Cleveland and Chicago are not being followed by makers here, except occasionally, where the account of a regular customer is involved. On machine bolts, rolled thread, makers here are not inclined to quote more than 70 per cent off list and on cut threads and on the larger and longer sizes are holding fairly well to 65 and 10 per cent off list. Pittsburgh district makers are trying to hold at $4.60 off list for blank nuts either in hot-pressed or c.p.c. and t. and $4.25 off list for tapped. Prices and discounts are given on page 498.

Steel Rails.—As a selling price, 1.85c., Pittsburgh, for 25- to 45-lb. rails has disappeared. Larger makers are quoting and glad to get orders at 1.75c., base, and even at this price are finding competition from rerolling mills rather stiff.

We quote 25 to 45-lb. sections, rolled from new steel, 1.75c.; rolled from old rails, 1.60c.; standard rails, $45 mill for Bessemer and $47 for open-hearth sections.

Plates.—Very little demand is developing in this district except for small tonnages for early shipment. A number of makers still are observing the quotation of 1.85c., but on actual sales 1.80c. about measures the top, and there is an inquiry from one of the railroad equipment manufacturers for about 600 tons carrying a price of 1.70c. As far as can be learned, the latter inquiry has not been placed.

We quote sheared plates, ¼ in. and heavier, tank quality, at 1.80c. to 1.85c. f.o.b. Pittsburgh.

Wire Products.—While orders, especially in nails, continue to increase in number, they do not gain much in size and the general character of the demand is such as to suggest a lack of confidence on the part of buyers in the maintenance of present prices. Neither jobbers nor manufacturers are buying more than a few weeks ahead, apparently because they do not want to be too heavily stocked in the event of a price cut. There are rumors that less than $2.75 base, per keg, Pittsburgh, has been done but verification is lacking and one maker here reports a customer who claimed he had a price of $2.65 and subsequently placed the order at $2.75. If there is any shading of prices, it is in wire rather than in nails, but the concessions are neither numerous nor large.

We quote wire nails at $2.75 base per keg, Pittsburgh, and bright basic and Bessemer wire at $2.50 base per 100 lb., Pittsburgh.

Spikes.—On standard railroad spikes, the recent purchase by the New York Central Railroad of 21,500 kegs at $2.50 per 100 lb. appears to have fixed that figure as the minimum and the old base of $2.75 has disappeared. Makers now are quoting $2.75 base on the smaller sizes and also on boat and barge spikes. The railroads are not buying or specifying at all freely and demand from the jobbers though fairly numerous, are only for small lots for prompt shipment. Prices are given on page 498.

Hot Rolled and Cold Rolled Strips.—Orders show a fair increase in number but do not gain much in size. There are more sellers than buyers and prices consequently favor the former. Some makers who are not aggressively seeking business are trying to maintain the old basis of 2.50c. to 2.60c. for hot rolled strips and 4.25c. for cold rolled strips. On competitive business, however, as low as 2.25c. has been done on the former and 4c. on the latter.

Boiler Tubes.—Small orders for early shipment are more numerous than they were recently, but capacity is far from being taxed and buyers are experiencing no difficulty in covering their requirements and usually at favorable terms. Discounts are given on page 498.

Cold-Finished Steel Bars.—Efforts to stabilize the market at 2.60c. base, Pittsburgh, have been unsuccessful due to the fact that some makers in their anxiety to secure orders have not observed this quotation and a recent reduction in the base to 2.50c. by a large maker has been quite generally followed by others. Even this price, however, does not rule very often on new business, which has been taken as low as 2.40c. base, the higher figure referring chiefly to shipments against old orders.

Hoops and Bands.—The base of 2.40c. has practically disappeared. Large cooperage interests have had no difficulty in developing a base of 2.25c. on hoops and even less has been quoted by companies which ordi-

narily are not regular factors in the hoop and band business. On small lot inquiries, however, the common quotations are 2.30c. to 2.35c. It is claimed that a price of $1.30 per bundle of 45 lb. for cotton ties is much more remunerative than 2.25c. for hoops and some mills which have done well with ties this year are not inclined to shade 2.25c. on hoops.

Sheets.—The past two weeks have been exceptionally good ones for the American Sheet & Tin Plate Co., its orders and shipments having averaged about 50 per cent of normal production. Sheet mills of this company are not running in excess of 40 per cent, but it is able to meet larger demands because of the existence of fair sized stocks. Independents are getting a fair amount of business but it is not quite as heavy as it was recently. Fresh irregularity and weakness is observed in prices, some four or five mills having lately taken business in black sheets at 2.75c. and galvanized sheets at 3.75c. base. Mills adhering to the regular bases of 3c. and 4c. frequently find it necessary to meet the low prices named by others to hold regular customers. The quotable market now is 2.75c. to 3c. base for black, 3.75c. to 4c. base for galvanized and 2.25c. to 2.40c. base on blue annealed sheets. It is said that some newcomers in the field of full-finished sheets are offering to take business at $5 to $7 per ton below the base of 4.70c. for No. 22 gage, as quoted by makers who have been in this business for some time. Prices are given on page 498.

Coke and Coal.—Outside of some inquiries made chiefly for the purpose of finding out probable prices by some furnace interests considering blowing in idle stacks, the market for beehive oven coke has been dull and featureless. Several Valley furnaces are mentioned as likely to go into blast before long, but definite action in this direction still is to be taken. The more common price idea of Connellsville operators on furnace coke for the remainder of the year is $3 per net ton, oven. This is considerably above what iron makers feel they can afford to pay on the present selling price of iron, and it is more than probable that some of the producers, who are figuring on starting up, will buy by-product coke, as did the Sharon Steel Hoop Co., a few weeks ago. It is impossible to make any change in prices on spot coke, standard 48-hr. fuel taking a range of $2.75 to $3 per net ton at oven, and foundry coke $3.75 to $4.50. The coal market does not show much life nor strength. Activity in slack to-day has dwindled and recent quotations of $1.70 for steam and $1.85 for gas slack have lately been shaded as much as 10c. to 15c. per ton. Mine run steam coal is quotable at $1.50 for Sewickley seam up to $2 for higher quality, while by-product coal ranges from $1.50 to $2 (generally at $1.60 to $1.85), and gas coal from $2 to $2.25.

Tin Plate.—Makers whose plants are in operation report a generous volume of rush shipment orders and in some instances have been obliged to put on additional capacity to accommodate these demands. As stock items have been pretty thoroughly liquidated, consumers are obliged to take new production and the market consequently is slightly firmer than it was recently. Stock items which recently sold down as low as $4.50 per base box now are not available at less than $4.75 and there is much closer adherence to the base of $5.25 for production plate than was true a short time ago. Considerable tin plate capacity still is idle in this and nearby districts. All of the 24 mills of the Wheeling Steel Corporation are down, while neither the Standard Tin Plate Co., Canonsburg, Pa., nor the Washington Tin Plate Co., Washington, Pa., which have been down for several months, has yet resumed. On the other hand, the Weirton Steel Co. has all of its 26 mills at Weirton, W. Va., running 16 turns a week, the McKeesport Tin Plate Co., McKeesport, Pa., is running about 80 per cent full and the Jones & Laughlin Co., 62½ per cent.

Old Material.—The market maintains a strong tone, though demand is lighter than it was recently. Actual increase in open-hearth furnace operations is slight but in anticipation of improvement in this direction almost all of the independent steel companies would take on tonnages. They are not buying heavily, however, because asking prices generally are above what they consider they can afford to pay. On heavy melting steel $13.50 per gross ton, delivered, is about the maximum bid that can be secured, and material thrown down on the storage yards at that price, it is claimed, would mean about $15 in the charging box because of handling charges. A few companies have a real need of supplies, but generally the condition is that the companies which are buying are in the market chiefly because they regard old material as cheap at current quotations. It takes only moderate buying to send prices up at present, because offerings are so meager. Producers are not forcing supplies on the market at current levels and dealers' stocks are off the market until prices are much higher. Foundry grades are in better demand than they were a short time ago, partly because of the scarcity and strength of pig iron. Rerolling rails are not plentiful and not available at less than $16 delivered, consuming points. We note one good sized sale at that price. The Westinghouse Electric & Mfg. Co. scrap list for September offers 3 to 5 cars of hydraulic compressed steel a week, 1 to 2 cars a week of turnings, and 1 to 2 cars for the month each of cast iron borings and shoveling steel.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh	$13.00 to $13.50
No. 1 cast cupola size	16.50 to 17.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Parkersburg and Huntington, W. Va.; Franklin, Pa., and Pittsburgh	16.00 to 16.50
Compressed sheet steel	10.50 to 11.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.	9.00 to 9.50
Railroad knuckles and couplers	14.00 to 14.50
Railroad coil and leaf springs	14.00 to 14.50
Railroad grate bars	11.00 to 11.50
Low phosphorus melting stock, bloom and billet ends, heavy plates, ½-in. and thicker	17.00 to 17.50
Railroad malleable	13.00 to 13.50
Iron car axles	19.00 to 20.00
Locomotive axles, steel	18.50 to 19.00
Steel car axles	14.50 to 15.00
Cast iron wheels	14.00 to 14.50
Rolled steel wheels	14.00 to 14.50
Machine shop turnings	8.50 to 9.00
Sheet bar crop ends at origin	12.50 to 13.00
Heavy steel axle turnings	10.00 to 10.50
Short shoveling turnings	9.50 to 10.00
Heavy breakable cast	15.00 to 15.50
Stove plate	12.00 to 12.50
Cast iron borings	9.00 to 9.50
No. 1 railroad wrought	12.00 to 13.00

Revised Federal Tax Bill

WASHINGTON, Aug. 23.—The revised tax bill passed by the House last Saturday, which is estimated to cut $818,000,000 from the tax levies of the nation by 1923, will be taken up by the Senate at the end of the recess, Sept. 21. Meanwhile, the Senate Committee on finance will hold additional public hearings on the measure and it is assumed will make a number of revisions as to details, if not as to fundamentals. The bill as passed by the House is supposed to produce a total of $3,347,000,000 revenue during the present fiscal year, or $221,000,000 less than the estimate under the existing law. The repeal of the excess profits tax and higher income tax rates will not become effective until Jan. 1, 1922, a disappointment to business interests of the country, which had hoped that this provision would be made retroactive as of Jan. 1, 1921.

Representative Fordney, chairman of the House committee on ways and means, stated that the bill is predicated on a policy of strictest economy, and added that the effect of the repeal of the transportation act cannot be other than beneficial. He pointed out that the objectionable taxes from the business standpoint, the standpoint of the cost of living, and the standpoint of the revival of the railroads is the existing tax on transportation, which produces a yearly revenue approximating $262,000,000.

"With a view to simplifying tax forms the bill provides for the creation of a tax board on which the taxpayers will be represented," he said. "Several changes have been made in the law to clear up administrative difficulties, and to simplify the tax forms, a conspicuous one being the amendment regarding Liberty Bond exemptions.

"In administering the existing law many loopholes have been discovered by the Treasury Department, and corrective recommendations by the department are incorporated in the bill passed by the House."

Chicago

CHICAGO, Aug. 23.

An unusual feature in the current demand for finished steel is the fact that immediate delivery is invariably asked on all orders placed with the mills. This indicates that many consumers have allowed their stocks to run very low. While it is apparent that most purchases are for replacement purposes, it is notable that orders are steadily increasing in number, and aggregate bookings of mills are growing larger. One important local producer reports that specifications received thus far this month are twice those of July. As July was an exceedingly poor month, the comparison is not so impressive as it might otherwise be, but it can nevertheless be truthfully said that business is slowly expanding.

Prices are no more clearly defined than heretofore, nor are they any weaker. In an effort to keep their plants running, producers continue to take business at a loss, evidently on the theory that if operations could be sufficiently increased the red figures on their books would be wiped out. If a slow cumulative increase in business in the next month or two should bring their operations to a 45 or 50 per cent basis, they will be able to gage more accurately what can be done with costs and will no doubt find that there is an inflexible limit under which high transportation and raw material costs will not permit them to go. Some observers in fact believe that present going prices will be found to be under that level and that a reaction upward, such as has taken place in pig iron prices, may also occur in steel.

The Chicago, Burlington & Quincy took public bids to-day on a small tonnage of steel. The low bid on 123 tons of structural steel and 49 tons of plates was 2c., Chicago, this price having been named by two local interests. The low figure on a small lot of sheets was equivalent to 3.90c., Pittsburgh, for No. 28 gage, galvanized.

Considerable interest has been aroused in the pig iron market by the appearance of an inquiry from India for 40,000 tons. The railroads continue to place repair work. The Illinois Central has awarded contracts for the repair of 1400 box and gondola cars.

Mill operations are approximately the same as heretofore, the only changes being for the better. The most marked improvement is by the Wisconsin Steel Co., which is now operating on a 40 per cent basis.

Pig Iron.—Local sellers have received an inquiry from India for 40,000 tons of 2½ to 3 per cent silicon foundry iron, for delivery over the rest of the year. It is not regarded likely, however, that the business will be placed here. There continues to be a fair rate of buying in this territory and the new prices are holding. A local melter has purchased 2000 tons of malleable, and a large radiator manufacturer has bought 1500 tons of foundry iron for delivery at Litchfield, Ill., and Kansas City. Other sales made recently range from several hundred tons to carload lots. Even at the advanced quotations, some business is still being placed for local producers in outside territories, such as southern Ohio, southern Indiana and the St. Louis district. The St. Louis Coke & Chemical Co. expects to bank its furnace at Granite City the latter part of this week. It has about 9000 tons of iron on yards, of which the larger part is less than 2¼ per cent in silicon. The Tennessee producer of silvery has sold most of its stocks with the result that Jackson County prices now rule in this market. A current inquiry calls for about 500 tons of silvery. A Milwaukee melter has purchased 1000 tons of low phosphorus at $40, delivered, part of the tonnage being resale and the remainder copper bearing material from furnace. A number of carload sales of copper free material have been made recently at $35.50, Valley furnace. Inquiries for charcoal iron include one for 120 tons for delivery over the remainder of the year and two others for a single carload each. Thus far one inquiry for first half delivery has been received by the local trade. It covers 1000 tons of foundry and one producer has submitted a quotation on the basis of present prices. Most of the other current inquiries range from carloads to several hundred tons. A Michigan printing press manufacturer wants 400 tons of foundry grade. A feature of the past week's business was the sale of 1000 tons of gravel fluorspar to a local user at $15, at mine.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$33.50
Northern coke, No. 1, sil. 2.25 to 2.75	20.50
Northern coke, foundry, No. 2, sil. 1.75 to 2.25	20.00
Northern high phos.	20.00
Southern foundry, sil. 1.75 to 2.25	25.67
Malleable, not over 2.25 sil.	20.00
Basic	20.00
Low phos., Valley furnace, sil. 1 to 2 per cent copper free	$34.50 to 35.50
Silvery, sil. 8 per cent	32.82

Ferroalloys.—Several hundred tons of approximately 15 per cent ferrosilicon has been bought by a local melter at $33 delivered, and a number of inquiries for carload lots have brought out quotations of $34, Chicago. Further sales of 50 per cent ferrosilicon have been made at $62.50, freight allowed. It is reported that the low prices on ferrosilicon are being named by Canadian producers, who are favored by the exchange situation. Ferromanganese has stiffened evidently because producers are discounting the passage of the tariff bill.

We quote 78 to 82 per cent ferromanganese, $72 to $75 delivered; 50 per cent ferrosilicon, $62.50 to $65 delivered; spiegeleisen, 18 to 22 per cent, $36 to $37 delivered.

Rails and Track Supplies.—New business in track supplies is light and the price situation is substantially unchanged. Specifications against rail contracts are disappointingly small.

Standard Bessemer rails, $45; open-hearth rails, $47; light rails rolled from new steel, 1.85c. f.o.b. makers' mills. Standard railroad spikes, 2.50c. to 2.75c., Pittsburgh; track bolts with square nuts, 3.50c. to 3.75c., Pittsburgh; tie plates, steel and iron, 2c. to 2.25c., f.o.b. makers' mills.

Railroad Equipment.—The Illinois Central has divided the repairs on 1400 box and gondola cars between the American Car & Foundry Co., the Haskell & Barker Car Co., the Pullman Co. and the Ryan Car Co. The Rock Island is in the market for 10 Mikado type engines and the Seaboard Air Line is inquiring for 5 mountain-type, 13 Mikado type and 10 six-wheel switch engines. Western roads are in the market for locomotive forgings and car axles. The Northern Pacific and the Great Northern have each purchased 100 tons of locomotive forgings, including locomotive axles, and a number of 100-ton inquiries for car axles are current.

Plates.—The Chicago, Burlington & Quincy Railroad takes open bids to-day on 200 tons of plates and shapes and on Sept. 2 will receive tenders on 2000 tons, to be used for car repair work in its own shops. There has been no material change in the plate market, aggregate demand being light and prices being indefinite. The attitude of sellers appears to be to quote what is necessary to get the business, with the result that varying concessions under the official price of 1.85c., Pittsburgh, are reported. So far as can be determined, the market is neither weaker nor stronger than heretofore.

The mill quotation is 1.60c. to 1.85c., Pittsburgh, the freight to Chicago being 38c. per 100 lb. Jobbers quote 2.88c. for plates out of stock.

Structural Material.—Structural inquiries and lettings are falling off, and competition among mills for plain material business is keen. There is no definite market level for plain material in this district. Mills are considering each inquiry individually and are naming quotations according to the desirability of the business. As a result variations in going prices are wide. Recent fabricating awards include:

Fifth Street Department Store, Los Angeles, Cal., 3271 tons, to American Bridge Co.

Northern Pacific Terminal Co. of Oregon, trainshed and umbrella shed, Union Depot, Portland, Ore., 136 tons, to an Oakland, Cal., fabricator.

Group of buildings, Saint Elizabeth's Hospital, Lafayette, Ind., 210 tons, to Indiana Bridge Co.

Vault, Lake Shore Trust & Savings Bank, Chicago, 80 tons, to Union Foundry Co.

Meat market building, Louisville, Ky., 150 tons, to Louisville Bridge & Iron Co.

Pending business includes:

San Jacinto Life Insurance Building, Beaumont, Tex., 550 tons.

Bryn Mawr School, Chicago, 230 tons, Gage Structural Steel Co. low bidder.

Frost National Bank Building, San Antonio, Tex., 382 tons, general contract awarded to J. P. Haynes, San Antonio.

New shop for F. Rosenberg Elevator Co., Milwaukee, 100 tons.

The mill quotation is 1.60c. to 1.85c., Pittsburgh, which takes a freight rate of 38c. per 100 lb. for Chicago delivery. Jobbers quote 2.88c. for materials out of warehouse.

Bolts and Nuts.—Purchases by railroads and jobbers are small and for immediate needs only. The same thing may be said of the automobile manufacturers with the possible exception of the leading maker of low priced cars, whose monthly purchases are fairly large. While prices are still weak, some bolt makers are turning away orders rather than take more business at a loss. As a result, the market is somewhat steadier and the appended quotations appear to be representative.

Small machine bolts, rolled threads,
70, 10 and 10 to 70 and 7½ per cent off list
Small machine bolts, cut threads, 70 and 10 to 70 per cent off list
Large machine bolts..... 70 and 10 to 70 per cent off list
Small carriage bolts, rolled threads,
65, 10 and 10 to 65 and 5 per cent off list
Small carriage bolts, cut threads,
65 and 10 to 65 and 5 per cent off list
Large carriage bolts..... 65 and 10 to 65 and 5 per cent off list
Lag bolts ..... 70, 10 and 7½ to 70 and 5 per cent off list
Stove bolts, in packages..... 80, 10 and 10 per cent off list
Stove bolts, in bulk..... 80, 10, 10 and 2½ per cent off list

Jobbers quote structural rivets, 3.68c.; boiler rivets, 3.78c.; machine bolts up to ⅝ x 4 in., 60 per cent off; larger sizes, 55 off; carriage bolts up to ⅝ x 6 in., 55 off; larger sizes, 50 and 5 off; hot pressed nuts, square and hexagon tapped, $3 off; blank nuts, $3.25 off; coach or lag screws, gimlet points, square heads, 60 per cent off. Quantity extras are unchanged.

Sheets.—The demand for this commodity is appreciably better than for plates, structural shapes or bars. Both mills and warehouses report that users have little material in stock and invariably ask for the immediate shipment when they buy. Individual orders are generally small, indicating that buyers are still timid. While keen competition is bringing out some shading in mill prices, the ruling market is substantially the same as a week ago. Blue annealed is weaker than either black or galvanized, owing to the fact that there is less demand for that product. The local independent continues to operate 14 out of 18 hot mills.

Mill quotations are 3c. for No. 28 black, 2.25c. for No. 10 blue annealed and 4c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stocks, No. 10 blue annealed, 3.53c.; No. 28 black, 4.65c.; No. 28 galvanized, 5.65c. Hoops and bands, 3.48c.

Bars.—Orders for mild steel bars are still small but gradually increasing in number. There is an increasing insistence on the part of the purchaser for immediate delivery, indicating that stocks have been depleted. In fact, sellers declare that it is surprising how many consumers have little or no remaining material in stock. As yet, however, buyers are cautious and are placing orders for replacement purposes only. There continues to be a fair run of small reinforcing jobs. Among the largest is a factory addition for the Cuneo-Hennebery Co., Chicago, requiring 450 tons, which is reported to have been let. Considerable road building is also under way, resulting in the purchase of a moderate quantity of reinforcing steel. The amount of concrete work being done may be judged by the fact that the leading cement producer is unable to keep up with its orders. Prices of both merchant and reinforcing bars are neither weaker nor stronger than a week ago. Jobbers, however, appear to be asking a full warehouse differential on reinforcing bars, bringing the quotation up to 2.53c., f.o.b., local store. The demand for bar iron is light and the ruling price for this commodity remains 1.75c., mill. There has been no material change either in the demand or price of rail carbon steel bars. Hard steel bar mill operations are somewhat steadier than they were a month or two ago.

Mill prices are: Mild steel bars, 1.55c. to 1.75c., Pittsburgh, taking a freight of 38c. per 100 lb.; common bar iron, 1.75c., Chicago; rail carbon, 1.75c., mill or Chicago.

Jobbers quote 2.78c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars is 4.20c. for rounds and 4.70c. for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.53c. base.

Wire Products.—Mills have received at least two offers of 500-ton orders of soft wire rods at $35, Pittsburgh, but the business has gone begging. While as low as $35 might have been done a few weeks ago, $40, Pittsburgh, is now the bottom, and most makers are insisting on the official price of $42. Railroad inquiries for nails are increasing. Several lots of 500 to 1000 kegs are in the market and a number have already been closed. The Rock Island is inquiring for 1100 kegs Railroad inquiries and orders for wire are principally in carload lots. Fall trade in barb wire is commencing to come in, and bookings of wire products in general are on an improved scale. Nevertheless it is to be noted that jobbers are buying cautiously and run the risk of being unable to supply their customers if a healthy autumn demand materializes. In such a case they would ask for immediate shipment and the mills, having no accumulated stocks to draw from, would be unable to meet the situation. For mill prices, see finished iron and steel f.o.b., Pittsburgh, page 498.

We quote warehouse prices f.o.b. Chicago: No. 9 and heavier black annealed wire, $3.38 per 100 lb.; No. 9 and heavier bright basic wire, $3.53 per 100 lb.; common wire nails, $3.48 per 100 lb.;; cement coated nails, $2.90 per keg.

Cast Iron Pipe.—Bay City, Mich., which took bids on 3000 tons, has awarded the business to W. J. Magher, a general contractor of that city, who will sublet. For the 36-in. pipe to be bought, steel has been specified, but cast iron has been decided upon for the remaining sizes, which will call for about 2000 tons. The Detroit Water Board awarded 1500 tons to the Lynchburg Foundry Co., as announced last week, but the letting was later cancelled by the City Purchasing Board, and new bids were ordered taken on Aug. 23. Other pending business includes:

Youngstown, Ohio, 1500 tons, bids to be received Aug. 31.
Bloomington, Ind., two carloads, Aug. 22.
Sidney, Ohio, 400 tons, Sept. 2.
Table Rock, Neb., 125 tons, Sept. 9.
St. Paul, Minn., 200 tons, Sept. 5.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., $45.60 to $48.60; ;6-in. and above, $42.60 to $45.60; class A and gas pipe, $3 extra.

Old Material.—The market has grown quieter, even the buying by dealers having abated. Consumers still refuse to pay the advanced quotations, the only noticeable exception being a local melter who bought 1000 tons of brake shoes at $11.25, delivered. With the market largely in the hands of the dealers, prices are about the same as a week ago. The only important railroad offerings are 3000 tons advertised by the Burlington and a blind list circulated by the New York Central.

We quote delivery in consumers' yards Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$15.00 to $15.50
Relaying rails	27.50 to 30.00
Car wheels	13.00 to 13.50
Steel rails, rerolling	12.50 to 13.50
Steel rails, less than 3 ft.	12.00 to 13.00
Heavy melting steel	11.00 to 11.50
Frogs, switches and guards cut apart	11.00 to 11.50
Shoveling steel	10.25 to 10.75
Low phos. heavy melting steel	13.50 to 14.00
Drop forge flashings	7.00 to 7.50
Hydraulic compressed sheet	7.00 to 7.50
Axle turnings	8.00 to 8.50
Per Net Ton	
Iron angles and splice bars	14.00 to 14.50
Steel angle bars	10.50 to 11.00
Iron arch bars and transoms	14.00 to 14.50
Iron car axles	18.50 to 19.00
Steel car axles	13.00 to 13.50
No. 1 busheling	9.00 to 9.50
No. 2 busheling	6.25 to 6.75
Cut forge	9.50 to 10.00
Pipes and flues	6.50 to 7.00
No. 1 railroad wrought	11.00 to 11.50
No. 2 railroad wrought	10.00 to 10.50
Steel knuckles and couplers	11.00 to 11.50
Coil springs	13.00 to 13.50
No. 1 machinery cast	13.00 to 13.50
Low phos. punchings	11.50 to 12.00
Locomotive tires, smooth	11.00 to 11.50
Machine shop turnings	3.50 to 4.00
Cast borings	5.00 to 5.50
Stove plate	11.50 to 12.00
Grate bars	10.00 to 10.50
Brake shoes	11.00 to 11.50
Railroad malleable	12.00 to 12.50
Agricultural malleable	12.50 to 13.00
Country mixed	8.50 to 9.00

New York

NEW YORK, Aug. 23.

Pig Iron.—The stronger prices on foundry iron reported last week are still in evidence and some business running into fairly large figures has been closed at the higher levels. Nevertheless some prices close at $18 are reported by consumers, though it is difficult to trace these quotations to any furnace. The inference of the trade is that some more re-sale iron is being thrown on the market. Furnace quotations range from $19 to $20 for No. 2 plain and from $19.50 to $20.50 for No. 2 X. Most, if not all, of the Buffalo furnaces are quoting on the basis of $20, furnace, for No. 2 plain, but some eastern Pennsylvania iron figures back to $19, base, at the furnace. A heating furnace company has placed 1500 tons of foundry iron, the order having gone, it is reported, to an eastern Pennsylvania furnace at $19.50, furnace, for No. 2 X. Another furnace company, which came into the market last week for 2000 tons for delivery over the remainder of the year, closed on Monday for at least 1000 tons and paid $20, furnace, for No. 2 X. Judged by these transactions, the market has strengthened from $1 to $1.50 a ton within two weeks. A significant feature of present demand is the willingness of consumers to cover for the last quarter of the year, indicating a confidence in prices which has not existed before this year. It is also to be noted that the furnaces are willing to accept business for forward delivery, whereas a month ago or so they would take nothing but prompt-shipment orders. Pending inquiries do not total very large, perhaps a few thousand tons. A car builder has not closed, so far as reported, on 1000 to 1500 tons for a Western plant and a machinery manufacturer is believed to be still interested in 500 tons of foundry iron, on which quotations were made a week or so ago.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $5.46 from Buffalo and $6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25	$22.52 to $23.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.02 to 22.52
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	21.52 to 22.52
Buffalo, sil. 1.75 to 2.25	24.46 to 25.46
No. 2 Virginia, sil. 1.75 to 2.25 (nom'l)	28.16 to 29.16

Ferroalloys.—The report is current that a Central Western consumer has been offered 200 to 300 tons of British ferromanganese at $57 to $60, seaboard, as against a prevailing quotation of $65. However, the $65 price is the general minimum so far as British producers themselves are willing to sell. It is reported that some dealers in Great Britain have been offering ferromanganese to merchandising representatives in this country at somewhat below the regular market price. With these possible exceptions, there are no offerings of ferromanganese below $65, seaboard, for the British product and $70, delivered, for the American. Imports from Great Britain have dwindled, having been only 275 tons in July, bringing the total for the first seven months to 5481 tons as against 23,711 tons for the first seven months last year. The spiegeleisen market is exceedingly quiet, with quotations unchanged. There is no activity in high grade manganese ore for which the quotations are nominally the same as a week ago. Imports of ore are also declining, having been only 5028 tons in July as against a rate of nearly 60,000 tons per month early in the year. Sales of carload lots of 50 per cent ferrosilicon are reported at $65 per ton, delivered, though $60 has been named as the basis of one transaction. Quotations are as follows:

Ferroalloys

Ferromanganese, domestic, delivered, per ton	$70.00
Ferromanganese, British, seaboard, per ton	$65.00
Spiegeleisen, 20 per cent, furnace, per ton	$26.00
Ferrosilicon, 50 per cent, delivered, per ton	$65.00
Ferrotungsten, per lb. of contained metal	50c. to 55c.
Ferrochromium, 6 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr.	14c.
Ferrovanadium, per lb. of contained vanadium	$4.50

Ores

Manganese ore, foreign, per unit, seaboard	20c.
Tungsten ore, per unit, in 60 per cent concentrates	$3.00 up
Chrome ore, 40 to 45 per cent Cr_2O_3, crude, per net ton, Atlantic seaboard	$20.00 to $25.00
Chrome ore, 45 to 50 per cent Cr_2O_3, crude, per net ton, Atlantic seaboard	$30.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	55c. to 60c.

Cast Iron Pipe.—A further reduction of $5 a ton in cast iron pipe has been made by leading producers, who believe that this will be the last. On 230 tons of 12-in. pipe for Yonkers, N. Y., the United States Cast Iron Pipe & Foundry Co. was low bidder, its price being $41.90 per ton, delivered. The general contract for waterworks extensions at Scarsdale, N. Y., requiring 800 tons of pipe has been let.. We quote per gross ton f.o.b. New York, carload lots, as follows: 6-in. and larger, $42.30; 4-in. and 5-in., $47.30; 3-in., $57.30, with $4 additional for Class A and gas pipe.

Finished Iron and Steel.—A noteworthy increase in fabricated steel projects is the outstanding feature of the local finished steel market. The largest letting covers 3700 tons for the Bowery Savings Bank building, awarded to the Hedden Iron Construction Co. Other awards include the following taken by the American Bridge Co.: A high school at Jeannette, Pa., 250 tons; an office building at Trenton, N. J., 200 tons; a bridge over the Mystic River at Mystic, Conn., 450 tons, and a factory building for the Onondaga Pottery Co., Syracuse, N. Y., 300 tons; and Eidlitz & Ross have been awarded 500 for the Bushwick telephone exchange in Brooklyn. Among the new steel structures, railroad work is conspicuous by its absence. Included in the new work are the following:

National Surety Co., Washington Street between Albany and Carlisle, 1000 tons.

An apartment house, Thirty-eighth Street and Park Avenue, 500 tons.

Five schoolhouses, three in New York totaling 2500 tons, and the others, totaling 350 tons, one at Syracuse, N. Y., and the other at Meadville, Pa.

A high school, Mercer County, Trenton, 500 tons, letting postponed to Sept. 6.

Wharf, Chestnut Street, Philadelphia, 1000 tons, bids to be taken Sept. 9.

Theater and office building, Philadelphia, 1500 tons.

Highway bridge for New York State at Aqueduct, 300 tons, bids Aug. 25.

Federal Reserve Bank, New York, 14,000 tons, including vault work, bids Sept. 3.

Boiler house, Cherry River Paper Co., West Virginia, 200 tons.

Representatives of some mills report a slight improvement here and there in demand, but in the main the situation continues unchanged. The improvement is chiefly in small orders. Without large projects, with the exception of a few pending structural jobs, present steel prices are not being thoroughly tested. On the ordinary small business prices are not being cut much except on plates, which are now quotable at 1.70c. to 1.75c., Pittsburgh, though some mills still adhere to the "regular" quotation of 1.85c. No new domestic car work has come out, but American car builders, who quoted on 1000 tank cars for the Russian Soviet Government, have learned that this order was placed in England, credits in gold having been arranged through a Stockholm bank. It now appears that the 1000 all-wood box car repairs for the Lehigh Valley will be obtained in a Hamilton, Ont., car plant. The Long Island Railroad Co. will receive bids, Aug. 29, for 550 kegs of spikes and bolts besides frog and switch work, covering estimated shop requirements from September to December.

We quote for mill shipments, New York, as follows: Soft steel bars, 2.13c.; plates, 2.18c. to 2.23c.; structural shapes, 2.18c. to 2.23c.; bar iron, 2.08c.

Coke.—A copper company which inquired for 1000 tons of furnace coke is reported to have received several quotations below $3 per net ton, Connellsville basis. Foundry coke is slightly firmer, sales having been made within the week at $4.25 to $4.50.

Warehouse Business.—The market continues to move along sluggishly with no changes in prices reported. Present quotations are in most cases nominal, a good sized order bringing out some shading. Buying is sporadic, one week bringing in a fairly large number of small orders, and the following week reverting to the dull condition. Some warehouses expect that there may be a slight price change in September, but this assumption is evidently based on the belief that the leading mill interest may make a downward revision at this time. The brass and copper market is unchanged. Wrought iron and steel pipe warehouses report no change. We quote prices on page 510.

High Speed Steel.—Although orders are still ex-

ceedingly small, most producers report them more numerous. Quotations continue nominally at about 90c. per lb. for 18 per cent tungsten high speed steel, with sales reported at slightly lower prices.

Old Material.—The trade continues hopeful, although transactions show little or no change for the better. There is a slight tendency of some dealers to hold stocks in yards in anticipation of a recovery early in the fall. There is some activity in cast iron pipe. The American Bridge Co. is considering offers for Pencoyd of No. 1 heavy melting steel and cast iron borings, both of extremely high grade, the former not over 4 ft. long. Prices show practically no change, although there is evidently a rather wide range in quotations on heavy melting steel which spreads from $7.50 per ton with some dealers to as high as $9 per ton with others. The latter quotation is for extremely high quality.

Buying prices per gross ton, New York, follow:

Heavy melting steel	$7.50 to $8.75
Rerolling rails	10.00 to 10.50
Relaying rails, nominal	37.50 to 40.00
Steel car axles	10.00 to 11.00
Iron car axles	16.00 to 17.00
No. 1 railroad wrought	10.50 to 11.00
Wrought iron track	7.50 to 8.75
Forge fire	5.00 to 5.50
No. 1 yard wrought, long	9.00 to 9.50
Light iron	2.00 to 2.50
Cast borings (clean)	5.00 to 5.50
Machine-shop turnings	2.50 to 3.50
Mixed borings and turnings	2.50 to 3.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	8.00 to 8.50
Stove plate	9.00 to 9.50
Locomotive grate bars	8.50 to 9.25
Malleable cast (railroad)	8.50 to 9.00
Car wheels	11.00 to 11.50

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast	$16.00 to $17.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	15.00 to 16.00
No. 1 heavy cast, not cupola size	14.00 to 15.00
No. 2 cast (radiators, cast boilers, etc.)	9.50 to 10.50

Boston.

BOSTON, Aug. 23.

Pig Iron.—Business the past week was confined to 3000 tons eastern Pennsylvania iron, silicon 2.00 to 2.50 per cent, nearby shipment, to the Whitin Machine Works, Whitingsville, Mass., at an indicated price of less than $19.50 furnace; 200 tons No. 2X to a Massachusetts foundry at $20 furnace; 100 tons No. 2X to a Holyoke, Mass., melter at $19.50 furnace and about a dozen car lots of No. 2 plain, No. 2X and No. 1X on a basis of $19.50 to $20.50 furnace for No. 2 plain, the aggregate business falling short of 3700 tons. No Buffalo, Southern or Virginia sales are reported. Prospective business has dwindled to small proportions. Furnaces quoting show a strong tendency to maintain silicon differentials. One eastern Pennsylvania furnace, for instance, is now quoting $19.50 for No. 2 plain, $20 for No. 2X and $21 for No. 1X. Another quotes $19 for No. 2 plain, $19.50 for No. 2X and $20.50 for No. 1X. Other interests, however, quote No. 2 plain and No. 2X at $20. Buffalo usually is quoted at $20 furnace base. The average large New England foundry appears better off for business than the small one. The Sessions Foundry Co., Bristol, Conn., has reduced wages 10 per cent. Other melters, due to keen competition, are endeavoring to reduce operating charges. Delivered pig iron prices follow:

East. Penn., silicon 2.25 to 2.75	$23.56 to $24.56
East. Penn., silicon 1.75 to 2.25	23.06 to 24.06
Buffalo, silicon 2.25 to 2.75	25.96 to 26.46
Buffalo, silicon 1.75 to 2.25	25.46 to 25.96
Virginia, silicon 2.25 to 2.75	31.08 to 33.08
Virginia, silicon 1.75 to 2.25	30.58 to 32.58
Alabama, silicon 2.25 to 2.75	30.16 to 31.16
Alabama, silicon 1.75 to 2.25	29.66 to 30.66

Coke.—The general foundry coke situation shows no improvement. Consumption continues below normal, forward bookings have not increased nor have New England oven outputs, and both the New England Coal & Coke Co. and the Providence Gas Co. quote spot and contract fuel at $10.66 delivered, where the local freight does not exceed $3.40.

Finished Material.—Within six weeks Boston will be in the market for a round tonnage of steel for the Allston bridge over the Boston & Albany Railroad tracks. Later, bids will be asked on structural steel for a Beacon Street bridge, specifications for which will include trusses weighing 67 tons each; also on 435 tons of structural steel for approaches on the Chelsea bridge, as well as 15 to 20-in. steel columns and a tonnage of sheet steel piling. The Strauss Bascule Bridge Co., Chicago, will supply double-leaf underneath counterweight type of bascule for the last named bridge, taking approximately 300 tons of steel. Steel mill representatives continue to report bookings for bars, plates and sheets as comparing favorably with those for July.

Jobbers now quote: Soft steel bars, $2.81½ per 100 lb. base; flats, $3.83 to $3.93; concrete bars, $2.50 to $3.09; tire steel, $4.20 to $4.70; spring steel, open hearth, $5.25; crucible, $11.50; steel bands, $3.46½ to $3.98; steel hoops, $4.18; toe calk steel, $5.25; cold rolled steel, $4.15 to $4.65; structural steel, $2.81½ to $2.96½; plates, $2.91½ to $3.10; No. 10 blue annealed sheets, $3.73; No. 28 black sheets, $4.75; No. 28 galvanized sheets, $5.75; refined iron, $2.83 to $4.75; best refined, $4.75; Wayne iron, $7; Norway iron, round, ¼-in. to 2½-in., 7.10c. per lb. net; other sizes, 7.75c. base.

Old Material.—Among the more important old material houses, business the past week was confined very largely to scattered car lot sales of No. 1 machinery cast to foundries at $16.50 to $17.50 delivered, and borings at $3.50 to $4.50 f.o.b. shipping point, for chemical and Pennsylvania mill consumption. The situation in New England is unusual. Dealers maintaining large yards are heavily stocked, cannot take in additional stock and cannot afford to sell at going prices. Small yard owners are well stocked and are offering material to local and nearby foundries at prices quoted to large dealers, usually around 65c. per cwt. for No. 1 machinery cast. The average foundry melt is only sufficient to absorb such offerings and there is little incentive to anticipate wants. Bids made by Pennsylvania mills on heavy melting steel and other material usually do not allow yard interests more than to break even, consequently there is a deadlock between buyer and seller. Although business is dull, prices are generally reported as very firm, but unchanged.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$17.50 to $20.00
No. 2 machinery cast	15.50 to 17.50
Stove plate	16.00 to 17.00
Railroad malleable	15.50 to 16.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$5.50 to $6.50
No. 1 railroad wrought	10.50 to 11.00
No. 1 yard wrought	8.50 to 9.00
Wrought pipe (1 in. in diameter, over 2 ft. long)	7.50 to 8.00
Machine shop turnings	2.50 to 3.00
Cast iron borings, rolling mill	3.50 to 4.50
Cast iron borings, chemical	3.50 to 4.50
Blast furnace borings and turnings	2.50 to 3.00
Forged scrap and bundled skeleton	5.00 to 5.50
Street car axles and shafting	12.00 to 12.50
Car wheels	11.00 to 11.50
Rerolling rails	9.00 to 10.00

Birmingham

BIRMINGHAM, Aug. 22.

Pig Iron.—Birmingham pig iron is firm at a minimum of $19 and seems headed to a higher level on slight provocation. One maker, who began the week with 1800 tons to sell, was almost cleaned out at its close and is about to retire from market, not being a producer at this time. Ill-assorted stocks and growing depletion of yard accumulations is gradually leading up to a point of acuteness. Melters wishing 2.25 to 2.75 per cent silicon analysis took 1.75 to 2.25 per cent. Inquiries coming by mail have been anticipated before arrival by the same inquiry and acceptance by wire. The off-grades have disappeared and leave no ground for false reports of a lower base than really exists. The Southern melt is increasing each week, stove plants and small foundries adding to production, while pipe founders seem scheduled for continuous appearance in the market unless they buy for forward delivery. Some inquiries for fourth quarter have been received. Makers do not care to quote, but, when they do, ask from $1.50 to $2 above the present base. The entire South is beginning to respond to the better feeling in the agricultural sections, which has led to increased activities in all lines. Business of the week includes about 6000 tons of merchant iron placed by four makers. It is agreed that the corner has been turned.

We quote per gross ton f.o.b. Birmingham district furnace, as follows:

Foundry, sil. 1.75 to 2.25	$19.00
Basic	18.00
Charcoal	32.00

Cast Iron Pipe.—High pressure pipe has hardened

and the nominal base of $35 for 6 in. is the minimum. Quotations for Southern delivery on small lots were $2 higher last week than in the one before. Total business of 6000 tons was done in the first three weeks of the month with the Pacific Coast and more is reported in sight. An influx of new business is expected shortly on a conviction that the corner has been turned. It is not stated which shop will make the 3500 tons for Milwaukee recently awarded to the United States Cast Iron Pipe & Foundry Co. Sanitary pipe melt is increasing, but price cutting is reported as still affecting the nominal base of $40.

Finishing Mills.—The Tennessee company went beyond 50 per cent of capacity operations in finishing mills this week, when, in addition to another week on full turn at the Bessemer plate, bar and guide mill, it also put in operation the structural mill at Fairfield. The rail mill, car works and tie-plate departments were also continued at work. Conners-Weymann began the fourth week of continuous operation of the cotton tie, band and hoop mill at Woodlawn. The Gulf States Steel Co. continued operation of blooming mill on better showing of order books.

Coal and Coke.—Coal production has increased and movement is larger. Standard foundry coke is active at $6 to $6.25 with Pacific Coast and Texas again in market.

Old Material.—Cast scrap is quite active and prices are firm. Steel shows slight tendency to harden, but transactions are few.

We quote per gross ton f.o.b. Birmingham district yard as follows:

Steel rails	$10.00 to $11.00
No. 1 steel	9.00 to 10.00
No. 1 cast	15.00 to 16.00
Car wheels	15.00 to 16.00
Tramcar wheels	12.00 to 13.00
No. 1 wrought	13.00 to 14.00
Stove plate	9.00 to 10.00
Cast iron borings	6.00 to 7.00
Machine shop turnings	6.00 to 7.00

Buffalo

BUFFALO, Aug. 23.

Pig Iron.—Increased foundry operation at points east of Buffalo is reflected in the volume of business placed here. With the exception of one producer, who has maintained a $21 base price throughout the period of price cutting and did but little business, other producers in general report improvement. With a stronger price the extraordinary tonnages reported last week have eased off—and while the sales have not been up to the point, the improvement is manifest, nevertheless. The base price now touches the $21 mark. One furnace has sold 6000 tons through its various branches and is working on inquiries for considerably more than this figure. Another furnace has inquiries in hand for 10,000 tons including one for one-third of this amount from a national buyer who is in the market about every 30 days. Its sales were 5000 tons and consisted of an unusually large number of small lots. The low limit in prices demanded by the newest factor in pig iron sales is now $20 and prices range from that level to $22. About 1000 tons have been booked on the basis of the new prices. Small lots of malleable have been moved at $21. Shipments of basic iron by a furnace still working on old contracts continues without unusual change. Like the others this furnace quotes $21 on No. 2 plain.

We quote f.o.b. dealers' asking prices per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil	$20.75 to $21.75
No. 2X foundry, 2.25 to 2.75 sil	19.75 to 20.75
No. 2 plain, 1.75 to 2.25 sil	19.00 to 20.00
Basic (nominal)	20.00 to 21.00
Malleable (nominal)	21.00 to 22.00
Lake Superior charcoal	36.00

Finished Iron and Steel.—Flurries in buying which had their inception with the announcement of the most recent price reductions have been maintained in a steady way. This is particularly the case in structural business, although no large orders have been placed. But one mill finds it impossible to join in a general expression of improvement. This interest started several open hearth furnaces and a blooming mill recently but orders have not kept apace with necessary mill schedules and unless some business not in prospect at this time develops a curtailment may be expected. Pipe business continues brisk and orders and inquiries show a marked increase. Much of this business is in carload lots. Nails and some wire products are quiet. Plate and shape business has shown marked improvement this month with one mill but bar business is slow. Operation will be increased with a large steel interest and all mills will be in operation before the end of the month with the exception of a rail mill. Proposed erection of a new power line from Niagara Falls to Buffalo at an estimated cost of $11,000,000 interests structural mills with reference to steel requirements for towers and foundations. A Masonic building at Jamestown involving 100 tons of shapes is engaging a few of the structural interests. Fifty per cent operation recently put into effect by a sheet interest which was down for several weeks, will likely be continued indefinitely.

Warehouse Business.—Improvement growing out of most recent price reductions is sustained and demand seems more stabilized than heretofore. An interesting and encouraging sidelight is the fact that a greater demand for machine tools is coming in—indicative of improved operation in shops. Customers out of the market for ten months have manifested growing interest within a week. Movement of all warehouse materials is more balanced, a change over the previous condition of the market when last week the best movement was in sheets. The general impression is that business is better with respect to both the number of orders as well as quantities asked for.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 2.90c.; plates, 2.90c.; plates, No. 8 gage, 3.50c.; soft steel bars and shapes, 2.80c.; hoops 3.50c.; blue annealed sheets, No. 10 gage, 3.45c.; galvanized steel sheets, No. 28 gage, 5.30c.; black sheets, No. 28 gage, 4.30c.; cold rolled strip steel, 6.40c.

Old Material.—Little can be said of the demand for old material except that transactions are on the same level from week to week. Prices are generally accepted as the lowest likely to be reached. Some strengthening of the market for heavy melting steel is noticed with reports of $13 and $13.50 delivered Pittsburgh. This would bring about $11 f.o.b. Buffalo.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel	$10.00 to $11.00
Low phos., 0.004 and under	14.50 to 15.50
No. 1 railroad wrought	12.00 to 13.00
Car wheels	13.00 to 14.00
Machine shop turnings	4.00 to 5.00
Cast iron borings	4.00 to 5.00
Heavy axle turnings	8.00 to 9.00
Grate bars	8.00 to 9.00
No. 1 busheling	9.00 to 10.00
Stove plate	11.00 to 12.00
Bundled sheet stampings	6.00 to 7.00
No. 1 machinery cast	14.00 to 15.00

Cincinnati

CINCINNATI, Aug. 23.

Pig Iron.—The market has slipped back into its customary dullness as far as sales are concerned. The stimulating influence of the recent price advances has apparently subsided, and only occasional sales are reported. With the foundry industry in this district running approximately 25 per cent of capacity, buyers are only disposed to cover for one or two months ahead, and at the rate of melting small tonnages will suffice for their needs. There are some melters who are willing to contract for first quarter of next year at to-day's prices, but furnaces are not inclined to quote that far ahead. Reports are heard that stocks of iron have found their way into brokers hands, but these cannot be confirmed. On Northern iron $20 is still the minimum, with some furnaces asking $20.50. Most of the sales are being made at $20, and included in these are several 100-ton lots. The largest sale reported was 300 tons to an Indiana melter. Carload sales are again taking their place as the market activity, but in the opinion of the trade the general situation is much improved. Stocks on furnace yards are perceptibly dwindling, and it is reported that at least two furnaces will be lighted in the Ironton district shortly after Sept. 1. The only inquiry of any size is one for 500

tons to a melter in nearby territory.

Based on freight rates of $4.50 from Birmingham and $2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$23.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	24.00
Ohio silvery, 8 per cent sil	30.02
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	22.52
Basic, Northern	21.52
Malleable	22.52

Finished Material.—While buying has not been very heavy, it is on a little larger scale than has been the case during recent months. The sheet market is the most active and a few orders for 100-ton lots have been placed in the week. Prices are inclined to hold firm although a couple of mills are reported to be shading the regular schedule. On an inquiry during the week, 2.90c. was quoted on black sheets and 3.75c. on galvanized. The majority of the sales, however, are being made on the basis of 3c. for black and 4c. for galvanized. It is reported that a considerable tonnage of reinforcing bars for the Columbus stadium have been placed with a Central, Ohio, re-rolling mill. Bar prices are holding firmly at 1.75c. There is very little plate or structural tonnage moving. In wire products it is said that plain wire has been sold at 2.25c., an order for 100 tons having been placed with an Ohio mill at this figure. The market on nails is steady at $2.75 per keg, Pittsburgh, and while reports are heard of $2.50, these are not confirmed. In the structural field the Mt. Vernon Bridge Co. has been awarded a contract for a bridge on the Evansville, Terre Haute & Eastern Railroad involving approximately 600 tons. The Indiana Bridge Co. has taken 200 tons for a hospital at Lafayette, Ind. The King Bridge Co. is reported to be low bidder on 800 tons of track elevation work for the Big Four at Indianapolis. The tonnage involved in the Kellogg Avenue bridge at Cincinnati is approximately 1000 tons instead of 400 as previously reported. A bridge over the Warrior River in Alabama, 600 tons, will shortly be up for figures. A telephone exchange building and a market building at Covington, Ky., are prospects which will develop in the near future.

Warehouse Business.—Small orders for immediate shipment continue as the prevailing activity. Some jobbers report an increased tonnage during the week. There have been no price changes since the ones recently announced. We quote:

Iron and steel bars, 3c. base; hoops and bands, 3.75c. base; shapes, 2.85c. base; plates, 2.85c. base; reinforcing bars, 3.07½c. base; cold rolled rounds, 1½ in. and larger, 4.25c.; under 1½ in. and flats, squares and hexagons, 4.75c.; No. 10 blue annealed sheets, 3.50c.; No. 28 black sheets, 5c.; No. 28 galvanized sheets, 5.75c.; wire nails, $3.25 per keg base; No. 9 annealed wire, $3.00 per 100 lb.

Coke.—The American Rolling Mill Co. is understood to have closed for 10,000 tons of Connellsville furnace coke at a price said to be $2.90 per net ton at ovens. The company will blow in one of its furnaces at Columbus shortly. Several other inquiries are before the trade, but the tonnages are small and immediate shipment is requested. Local houses profess to see a firmer tone to the coke market, but prices have not advanced.

Old Material.—Cleveland and Wheeling district consumers were purchasers in the local scrap market in the week. Heavy melting steel was sold in the Cleveland district at around $13, delivered, and some mixed borings and turnings to Wheeling at $9, delivered. The local market is quiet, the larger consumers still being closed down. Foundry scrap is exceptionally quiet. Prices, while having a firmer tendency, are quotably unchanged.

We quote dealers' buying prices:

Per Gross Ton		
Bundled sheets	$4.00 to	$5.00
Iron rails	11.00 to	12.00
Relaying rails, 50 lb. and up	25.00 to	26.00
Rerolling steel rails	10.00 to	11.00
Heavy melting steel	8.50 to	9.50
Steel rails for melting	9.00 to	10.00
Car wheels	11.50 to	12.50
Per Net Ton		
No. 1 railroad wrought	8.50 to	9.50
Cast borings	2.00 to	2.50
Steel turnings	1.00 to	2.00
Railroad cast	11.00 to	12.00
No. 1 machinery	12.00 to	13.00
Burnt scrap	6.50 to	7.50
Iron axles	15.00 to	16.00
Locomotive tires (smooth inside)	8.50 to	9.50
Pipes and flues	4.00 to	5.00

St. Louis

ST. LOUIS, Aug. 23.

Pig Iron.—The market is firm. Buyers are showing more interest by far than for some time past. More inquiries are being received, and more orders, and there is generally a better feeling among consumers except in the stove trade, whose business has not yet recovered from the effects of the buyers' strike of the farmers. Inquiries were out for about 3000 tons in various lots for prompt shipment. A Quincy, Ill., stove plant bought 300 tons for last quarter shipment and a local stove plant which had an inquiry out for 100 tons bought 400 tons. There is an inquiry out for a car of 49 to 51 per cent ferrosilicon.

We quote delivered consumers' yards St. Louis as follows, having added to furnace prices $2.80 freight from Chicago and $5.74 from Birmingham:

Northern foundry No. 2	$22.88
Northern malleable	22.88
Basic	22.88
Southern foundry, sil. 1.75 to 2.25	24.74

Coke.—There are more inquiries and more business is being placed, although there are no large orders. Interest is being shown in an inquiry for 2000 tons from Mexico for August and September delivery. Prices are unchanged. Standard Connellsville foundry coke is being quoted at $4 to $4.50 per net ton at ovens, with special brands up to $5.25. The furnace product is $1 lower.

Old Material.—The slight flurry among dealers last week has about subsided, although advances of about 50c. per ton are noted in most grades. Steel foundries and rolling mills are on a still hunt for bargains, but are declining to pay the prices at which dealers are holding material. Thus far there has been no increase in mill operations, and only slight improvement in foundry operations. The American Steel Foundries announced that it would light up one furnace at its East St. Louis plant on Sept. 6, employing about 450 men, but the resumption has been postponed indefinitely. No railroad lists are before the market this week.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton		
Iron rails	$13.00 to	$13.50
Steel rails, rerolling	12.00 to	12.50
Steel rails, less than 3 ft	10.50 to	11.00
Relaying rails, standard section	29.00 to	31.00
Cast-iron wheels	11.50 to	12.00
No. 1 heavy railroad melting steel	10.00 to	10.50
No. 1 heavy shoveling steel	9.50 to	10.00
Ordinary shoveling steel	9.00 to	9.50
Frogs, switches and guards, cut apart	10.00 to	10.50
Ordinary bundled sheet	4.00 to	4.50
Per Net Ton		
Heavy axle and tire turnings	5.50 to	6.00
Iron angle bars	11.00 to	11.50
Steel angle bars	8.50 to	9.00
Iron car axles	16.50 to	17.00
Steel car axles	12.50 to	13.00
Wrought iron arch bars and transoms	13.00 to	13.50
No. 1 railroad wrought	9.50 to	10.00
No. 2 railroad wrought	9.00 to	9.50
Railroad springs	10.00 to	10.50
Steel couplers and knuckles	10.00 to	10.50
Locomotive tires, 42 in. and over, smooth inside	9.00 to	9.50
No. 1 dealers' forge	6.00 to	6.50
Cast-iron borings	5.50 to	6.00
No. 1 busheling	9.50 to	10.00
No. 1 boilers cut in sheets and rings	5.50 to	6.00
No. 1 railroad casts	12.00 to	12.50
Stove plate and light cast	11.00 to	11.50
Railroad malleable	9.50 to	10.00
Agricultural malleable	9.00 to	9.50
Pipes and flues	7.00 to	7.50
Heavy railroad sheet and tank	6.00 to	6.50
Light railroad sheet	3.00 to	3.50
Railroad grate bars	7.50 to	8.00
Machine shop turnings	4.00 to	4.50
Country mixed iron	7.00 to	7.50
Uncut railroad mixed	7.50 to	8.00
Horseshoes	10.00 to	10.50
Railroad brake shoes	8.50 to	9.00

Finished Iron and Steel—An improvement is noted. No big tonnage is being placed, but there is a fair amount of carload business. The Missouri Pacific Railroad, which is showing more activity than other lines, will place an order in October for tie plates, in addition to the 3000 tons mentioned last week as having been ordered. This railroad also has out an inquiry for building 20 bodies and fire boxes. An inquiry has been received by the Rock Island for 200 50-ton composite coal cars. Orders are being received from some of the lines for carloads of wheels and axles. Chief interest in structural steel lies in the steel airship hangar at Scott Field, Belleville, Ill., which will be placed through

the chief of construction service at Washington on Sept. 15; 3000 tons are involved. Local fabricators are working through contractors here. The inquiry for 450 tons of reinforcing bars for the Frost National Bank Building, San Antonio, Tex., is still pending. The American Car & Foundry Co. announces that its plant at Madison will be reopened within two weeks to repair 1500 cars for the Big Four lines.

For stock out of warehouse we quote: Soft steel bars, 2.87½c. per lb.; iron bars, 2.87½c.; structural shapes, 2.97½c.; tank plates, 2.97½c.; No. 10 blue annealed sheets, 3.62½c.; No. 28 black sheets, cold rolled, one pass, 4.75c.; cold drawn rounds, shafting and screw stock, 4.20c.; structural rivets, 3.77½c. per 100 lb.; boiler rivets, 3.87½c.; tank rivets, 7/16 in. and smaller, 60-10 per cent off list; machine bolts, large, 55 per cent; small, 60 per cent; carriage bolts, large, 50-5 per cent; small, 55 per cent; lag screws, 60 per cent; hot pressed nuts, square or hexagon blank, $3.25; and tapped, $3.00 off list.

Cleveland

CLEVELAND, Aug. 23.

Iron Ore.—The Algoma Steel Co., which so far this year has taken no ore has advised shippers that it will at once begin to take shipments and, while the amount has not been definitely announced, it is expected that it will be close to 250,000 tons. This company has long time contracts and consequently will buy no ore in the open market. Price concessions by one seller apparently are not disturbing the market. Other ore firms claim that the interest naming the lower prices has not maintained regular quotations during previous years. August shipments are expected to show some improvement over July.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, $6.45; Old range non-Bessemer, 51½ per cent iron, $5.70; Mesabi Bessemer, 55 per cent iron, $6.20; Mesabi non-Bessemer, 51½ per cent iron, $5.55.

Pig Iron.—Probably the most interesting feature of the pig iron market is the increase in the demand as shown by improvement in shipments. Comparing the first three weeks of August with the corresponding period of July, one producer has shipped almost twice as much iron this month as last, two others have increased shipments 50 per cent and another 33 per cent. Inquiries and sales also showed some improvement the past week, although most orders are for carlots. Prices on foundry iron are firm and range from $20 to $21, with a large proportion of orders taken at $20.50. Some sellers are not going below that level and one is trying to work its price up to $21. With the recent stiffening of the market, iron for Cleveland delivery is about 50c. per ton higher. The American Radiator Co. was in the market during the week for 1000 tons of foundry iron for its Springfield and Titusville plants and is reported to have made purchases. It also bought 250 tons additional low silicon iron for its Detroit plant. An Erie consumer purchased 300 tons of foundry iron. An Ohio foundry is inquiring for 1000 tons of foundry iron and the American Car & Foundry Co. is in the market for 1000 tons of malleable iron for its Detroit plant. On an inquiry for 500 tons of basic iron from a western Pennsylvania consumer, a Cleveland interest having a freight advantage over the Valley has quoted $19.25, Valley furnace, but the consumer is reported to have secured a quotation of $18.50, Valley furnace.

We quote delivered Cleveland as follows, based on the new freight rate, there being a 56c. switching charge for local iron, a $1.96 freight rate from Valley points, a $3.36 rate from Jackson and $6.67 from Birmingham:

Basic		$19.96
Northern No. 2 fdy., sil. 1.75 to 2.25	$20.50 to	21.00
Southern fdy., sil. 2.25 to 2.75		26.92
Ohio silvery, sil. 8 per cent		30.86
Standard low phos., Valley furnace	36.00 to	36.25

Semi-Finished Steel.—There is a fair demand for sheet bars on which $30, Youngstown, is generally regarded as the market price. One inquiry for a 5000-ton lot from a Valley district consumer is reported.

Finished Iron and Steel.—Demand has improved somewhat and August orders will show a moderate gain over July. Orders usually are for small lots for immediate shipment, indicating that consumers' stocks are low. The heaviest demand is still from the automobile industry. Several of the leading Detroit motor car builders now expect to keep operating at about the present capacity during September, and are buying steel to cover their requirements. The Ford Motor Co. has placed 2500 tons of light plates with a Youngstown district mill, and is understood to have bought the same tonnages from another mill. There are signs of increasing activity on the part of some agricultural implement manufacturers, but one farm tractor manufacturer has curtailed production somewhat. The demand for plates has improved and the Otis Steel Co. is operating its Lakeside plant at full capacity this week. There is considerable irregularity in plate prices but price cutting is less pronounced on structural shapes, although a desirable order would probably bring out a 1.75c. quotation. The 1.75c. price on soft steel bars is being quite generally maintained. On plates 1.75c. has become the fairly well established price, but there are apparently authentic reports of quotations as low as 1.65c. for desirable orders. A Cleveland manufacturer has placed 600 tons of plates, shapes and structural material for a coal handling plant for Duluth. This inquiry brought out a 1.75c. quotation for all the material, but was placed at a slightly higher price before the lower price appeared. An inquiry is pending on 675 tons of plates for stills for the Standard Oil Co. This company has placed 133 tons of shapes and plates. Whitehead & Kales, Detroit, has taken the contract for the municipal car barns in that city, and an office building and shops for this railroad system, requiring 1500 tons, will be placed shortly. An Indiana interest is inquiring for 500 tons of structural material and 1200 tons of plates, presumably for Ohio River boats.

Sheets.—Demand shows an improvement and manufacturers report a broadening in the market in that they are getting orders from some consumers who have not been buyers for months. Orders are mostly for small lots for early requirements. On blue annealed sheets quotations range from 2.25c. to 2.40c. Black sheets are generally quoted at 3c., although a 2.85c. price is being named. Automobile body sheets are being quoted at 4.70c. for No. 28 gage.

Warehouse Business.—Local jobbers report some improvement in warehouse business and August sales will show a fair gain over July.

Jobbers quote steel bars, 2.64c.; plates and structural shapes, 2.74c.; No. 9 galvanized wire, 3.50c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4c.; No. 28 galvanized sheets, 5c.; No. 10 blue annealed sheets, 3.25c.; hoops and bands, 3.29c.; cold-rolled rounds, 3.85c.; flats, squares and hexagons, 4.35c.

Bolts, Nuts and Rivets.—Bolt, nut and rivet makers believe that a turn for the better has come. Prices are still somewhat irregular. The demand for rivets for car repair and oil country work has improved and the leading local producer increased operations this week to nearly full capacity. The Navy Department has reinstated an order for 1500 tons of rivets taken by this plant but held up several months ago. Most sales are being made at 2.50c. for structural and 2.60c. for boiler rivets, but these prices are being shaded $1 a ton for large orders.

Old Material.—The market is firm at the recent advance and there is a fair volume of inquiry from dealers who either have orders to fill or want to make speculative purchases. Several Valley mills have been buying scrap recently and one Youngstown consumer is reported to have made an additional purchase of cast borings and compressed steel the past week. These grades and heavy melting steel and turnings are the most active.

We quote per gross ton delivered consumers' yards in Cleveland and vicinity as follows:

Heavy melting steel	$12.25 to	$12.75
Steel rails, under 3 ft	12.75 to	13.25
Steel rails, rerolling	14.25 to	14.75
Iron rails	11.00 to	12.00
Iron car axles	18.00 to	19.00
Low phosphorus melting scrap	12.50 to	13.00
Cast borings	7.25 to	7.75
Machine shop turnings	6.00 to	6.50
Mixed borings and short turnings	7.00 to	7.50
Compressed steel	8.00 to	8.25
Railroad wrought	12.00 to	12.50
Railroad malleable	12.00 to	12.75
Light bundled sheet stampings	4.50 to	5.00
Steel axle turnings	9.25 to	9.75
No. 1 cast	16.00 to	16.50
No. 1 busheling	7.50 to	8.00
Drop forge flashings, over 10 in	5.50 to	6.00
Drop forge flashings, under 10 in	6.00 to	6.50
Railroad grate bars	12.75 to	13.00
Stove plate	13.00 to	13.25
Pipes and flues	6.50 to	7.50

Philadelphia

PHILADELPHIA, Aug. 23.

With the closing of a few tonnages of foundry iron on the basis of $19, Eastern furnace, the foundry iron market is on a firmer basis, the minimum for No. 2 plain iron now being $19.50, furnace, while No. 2X is quoted at $20. One or two furnaces are naming $20 and $20.50 on these grades. Eastern Pennsylvania furnace operators are apparently determined to take no more business below these prices, but are willing to sell for delivery over the remainder of the year, a factor which has caused a number of buyers to close for practically their entire requirements for the last four months.

Few inquiries of importance for steel are being received by the mills, with the result that prices remain untested and virtually unchanged. Plates are available at 1.70c. to 1.75c., Pittsburgh; shapes are fairly firm at 1.85c., though sizable projects might bring concessions; steel bars are firm at 1.75c.; bar iron is off $1 a ton at 1.65c., Pittsburgh; sheets are weak, the minimum prices now appearing to be 2.25c. for blue annealed, 2.90c. for black and 3.75c. for galvanized, Pittsburgh; stock tin plate is offered at $4.50; bolts, nuts and rivets continue irregular and weak, though one leading Eastern producer has virtually withdrawn from the market by advancing prices.

Buyers with definite projects in hand for which steel must eventually be purchased are withholding inquiries, making the explanation to mill representatives that they expect lower prices. The attitude of the mills seems to indicate that the initiative must come from the buyer; in other words, if lower prices are quoted it will be when definite tonnages invite more spirited competition.

Ferroalloys.—A British agent is reported to have received authorization to quote $60, seaboard, on imported ferromanganese. Domestic producers continue to quote $70, delivered, but will probably meet competition.

Pig Iron.—Several thousand tons of foundry iron has been sold within the past week, but these transactions were at prices quoted more than a week ago. Following the price advance of Eastern furnaces, a smaller volume of business has been done at the higher quotations and there is comparatively little business pending. Notable among the week's sales were two lots of about 3000 tons each to the Whitin Machine Works, Whitinsville, Mass., and to the Florence Iron Works, Philadelphia. Both of these transactions were on the basis of $19, furnace, for No. 2 plain iron. Other smaller lots, including one of 800 tons bought by the Thatcher Furnace Co., New York, and one of 1500 tons bought by the Richardson & Boynton Co., New York, make up a fairly good week for this market. The bulk of this business was booked by one furnace company, whose prices are now $19.50, furnace, for No. 2 plain and $20, furnace, for No. 2X. One or two eastern Pennsylvania furnaces are quoting $20 for No. 2 plain and $20.50 for No. 2X. Apparently it would now be difficult to buy foundry iron below $19.50, base. Reports of lower prices emanate usually from buyers and upon being traced are found to relate to quotations which were made a week or ten days ago. Whatever the future may bring forth, it is quite certain that the local pig iron market is now on the firmest basis it has experienced this year. With the larger business of the past few weeks the few furnaces now in blast in this district find themselves in a fairly comfortable position and it is the expectation of their operators that consumption will continue to exceed the output, which is exceedingly small. There is a considerable tonnage of iron on furnace banks, but the owner of the largest quantity shows no disposition to throw this upon the market at lower than the prevailing market prices, but on the contrary is seemingly anxious to obtain all that the market will afford. There seems no likelihood that additional merchant furnaces will go into blast until market prices have ascended above the cost line and until business has expanded sufficiently to assure them of a backlog upon which to start operations. Our quotations for foundry iron show an advance of 50c. per ton over the prices of last week.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to $1.54 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$20.34 to $21.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	20.84 to 21.76
Virginia No. 2 plain, 1.75 to 2.75 sil.	28.74
Virginia No. 2X, 2.25 to 2.75 sil.	29.24 to 29.74
Basic deliv. eastern Pa.	19.00
Gray forge	20.00 to 21.00
Malleable	20.00 to 21.00
Standard low phos. (f.o.b. furnace)	36.50
Copper bearing low phos. (f.o.b. furnace)	35.00

Plates.—The demand continues light and prices are stationary. While some mills continue to quote 1.85c., Pittsburgh, plates are available at 1.70c. to 1.75c., Pittsburgh, and these prices may be more nearly regarded as the market on sizable lots than the higher figure. On small lots 1.85c. has been obtained.

Structural Material.—Current low prices on fabricated work have led to the presumption that prices on plain material have been made below 1.85c., Pittsburgh, but there is so little open competition owing to the scarcity of projects that definite information to this effect is lacking. One Eastern mill is credited with quotations on a mill basis which figure back $2 or $3 a ton below the 1.85c. Pittsburgh basis, but generally the price situation on shapes appears to be firmer than on plates. Some mill representatives declare their willingness to make slight concessions on sizable tonnages. A municipal pier at the foot of Chestnut Street, now being figured upon, involves about 500 tons of shapes.

Bars.—Steel bars continue firm at 1.75c., Pittsburgh. Apparently buyers have not found it easy to shade this price except, perhaps, on rerolled material for concrete work. Bar iron is weaker and can be had at 1.65c. to 1.75c., Pittsburgh, according to the specification.

Sheets and Tin Plates.—While the nominal quotations on sheets are 2.40c. for blue annealed, 3c. for black and 4c. for galvanized, Pittsburgh, these prices are being quite freely cut on desirable lots. The minimum prices appear to be 2.25c. on blue annealed, 2.90c. on black and 3.75c. on galvanized. Production tin plate continues to be quoted at $5.25 per base box, but stock tin plate is being sold at $4.50.

Bolts, Nuts and Rivets.—Prices continue weak, some of the current prices, it is stated, being below cost. One of the principal Eastern makers has advanced bolts to the basis of 60 and 10 per cent off list, which is equivalent to a withdrawal from the market as lower prices are being made by competitors.

Old Material.—The belief of scrap brokers and dealers that prices of old material are at the bottom is borne out by the rise in price which occurs with any demand however slight. Within the past week buying of blast furnace borings and turnings forced the price up 50c. a ton. Rerolling rails and carwheels have sold at slightly higher prices than quoted a week ago. Heavy melting steel is still to be had at $11.50, though some brokers say they would not sell below $12 or $12.50. In the past few weeks there have been more advances than declines despite the dullness of business. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$11.50 to $12.50
Scrap rail	11.50 to 12.50
Steel rails, rerolling	15.00 to 15.50
No. 1 low phos., heavy 0.04 and under	17.00 to 18.00
Car wheels	17.00 to 17.50
No. 1 railroad wrought	14.00 to 15.00
No. 1 yard wrought	12.50 to 13.00
No. 1 forge fire	10.00 to 10.50
Bundled sheets (for steel works)	8.00 to 8.50
No. 1 busheling	11.50 to 12.00
No. 2 busheling	10.00 to 11.00
Turnings (short shoveling grade for blast furnace use)	8.00 to 8.50
Mixed borings and turnings (for blast furnace use)	8.00 to 8.50
Machine-shop turnings (for rolling mill and steel works use)	8.00 to 8.50
Heavy axle turnings (or equivalent)	9.00 to 9.50
Cast borings (for rolling mills)	9.50 to 10.00
Cast borings (for chemical plants)	No market
No. 1 cast	17.00 to 17.50
Railroad grate bars	12.50 to 13.00
Stove plate (for steel plant use)	12.00 to 12.50
Railroad malleable	15.50 to 16.50
Wrought iron and soft steel pipes and tubes (new specifications)	13.00 to 13.50
Iron car axles	No market
Steel car axles	No market

INTEREST IN GERMAN MATERIAL

Nails, Wire and Spiegeleisen Quoted at Competitive Prices New York—Japan Continues Active

NEW YORK, Aug. 23.—Transactions at present are still confined to Far Eastern markets. There is evident a rapidly increasing interest in German iron and steel by consumers in the United States, who are obtaining from German mill representatives in New York quotations and terms of delivery on such materials as blue annealed sheets, structural and ship rivets, machine bolts, wire nails, plain and barbed wire, bars and similar products. In one case negotiations are in progress for the purchase of about 28,000 kegs (133-lb. kegs) of wire nails, which it is said may be put down in New York at about $2.75 per keg or better. Galvanized wire can be delivered, c.i.f. New York, at 2.75c. per lb. Sheets, however, are not a profitable importation at present. The best possible price on galvanized sheets of Belgian origin at present is about 4.80c. per lb., c.i.f. New York, which cannot compete with the domestic quotations.

German foundry iron has shown another decrease and can now be obtained for export at $15 per ton, f.o.b. Hamburg, which price, however, is not sufficiently low to import it profitably for American consumption. German spiegeleisen, 45 to 50 per cent, may prove marketable here, as it can now be put down in New York or other Atlantic ports at about $60 per ton, against the domestic price of $65 to $70 per ton. Even better than $60 could probably be done on a large tonnage.

German Prices in the Orient

To Oriental markets German prices prevent anything like American competition on a price basis. The galvanized wire offered at 2.75c. per lb., New York, is quoted to the Far East as low as 2.72c. per lb., c.i.f. Dairen, Manchuria, and wire nails, 133 lb. to the keg, are offered to the Orient at about $3.80 per keg. A recent sale of 535 tons of soft steel bars to Japan, which was handled by a New York exporter, resulted in the bars being delivered, c.i.f. Japanese port from Germany, at a price better than $45 per ton.

A lot of 500 tons of reinforcing bars for a building project in Osaka, Japan, has been placed with an American mill through the New York office of a large Japanese export house. Sheet buying continues to lead in exports to Japan. There is some interest also in tin plate, one inquiry being in the market for about 1500 base boxes. Copper buying is also beginning to show signs of revival despite the recent cessation of purchases caused by the temporary ban on imports for minting purposes, issued by the Chinese Government for political reasons. The new buying is largely of cathode copper, which will be used in wire drawing, the wire to be used in the various hydro-electric projects in the Far East. One exporter has closed on a total of about 2000 tons of cathode copper in the past fortnight.

Oriental Railroad Orders to Belgium

Keen competition is not entirely confined to German sellers in the Oriental markets. On the recent inquiry issued by the Association of Chinese Bankers, calling for 41 locomotives of various types, 200 covered freight cars and 40 open cars, only five of the locomotives (2 prairie type and 3 Pacific type) were placed with American locomotive builders. The remainder of the locomotives and cars went to Belgium. As an evidence of Belgian bidding on rails, a recent inquiry for 300 tons of 40-lb. basic Bessemer rails brought out a price of £10 12s. ($38.70), f.o.b. Antwerp, bid by the Ougree-Mayihaye works, Belgium, while Wendel & Co., Lorraine, submitted a bid of £8 4s. 10d. ($30.10) per ton, f.o.b. Antwerp, on a tonnage of 85-lb. Bessemer rails.

Some small orders of light rails for Japan have recently been placed with American mills and there is an inquiry still in the market for about 700 tons of 20-lb., 25-lb. and 35-lb. rails for Japan. Evidently a fairly large volume of inquiries is being withheld by Japanese buyers in anticipation of still lower prices here. With a clarification of the price situation, some exporters look for renewed buying from the Far East. A large Japanese export house in Japan recently obtained from its European branch a bid of £12 per ton, c.i.f. Chinese port, on the 15,000 tons of 85-lb. rails inquired for by the Pekin-Mukden railroad, but did not submit this quotation because of unsatisfactory financial conditions that would have been involved in the contract with the railroad.

Although China is generally considered as potentially an American market, the recent report of the British customs service shows that in 1920, 44 per cent of the imports and 39 per cent of the exports were British, while the American exports and imports were 18 per cent and 12 per cent and the Japanese 29 per cent and 26 per cent. This shows an increase of British imports of 35 per cent over 1913.

The Imperial Japanese Government recently purchased two 62-ton electric freight locomotives, totaling about $150,000. The locomotives, which are of a box cab, narrow gage type, will operate on the main lines of the Government railroads. They are equipped with four 250-hp. motors each, and are being built by the Westinghouse Electric & Mfg. Co., East Pittsburgh.

The Argentine Minister of Public Works has requested new tenders on 70 freight cars, broad gage, 40 tons capacity, for use on the port railroads, according to a cable to the Bureau of Foreign and Domestic Commerce. Bidding will close Sept. 2. Either the minister of public works or the director general of railroads (Direccion General de Ferrocarriles) may be addressed for specifications at Casa Gobierno, Buenos Aires, Argentine.

Adolfo Vazquez, Andres Mellado 19, Malaga, Spain, wishes communication with a reliable firm to represent him in the United States in the sale of various minerals, oxide of iron, etc.

The contract for the erection of a 112-mile high tension electric line between Victoria Falls and Melbourne, Australia, has been awarded to Milliken Brothers Mfg. Co., New York. The contract, which involves about £75,000 ($273,750), calls for the erection of 634 steel towers, over which a current of 132,000 volts will be carried. The contract was obtained in competition with British, German and Australian companies. This company reports contracts under way in Burma, South Africa and Norway.

British Iron and Steel Market

More Iron Being Made—Steel Prices Cut to Meet Continent—Wages Going Down

(By Cable)

LONDON, ENGLAND, Aug. 23.

Eleven Cleveland blast furnaces are now in blast. Producers are asking purchasers of No. 3 G. M. B. to take equal quantities of No. 4 foundry iron at a combined price of £6 12½s. ($24.25). There is practically no demand, however, owing to the cheapness of Continental offerings. Luxemburg basic pig iron is being sold at £4 5s. ($15.56) c.i.f. Tees. Hematite makers are moderately sold and less disposed to cut export quotations.

There is a small reduction in British home trade steel prices, but these are still far above Continental figures. German billets are being sold at £6 12½s. ($24.25) f.o.b., on the basis of shipments in five weeks. German wire rods are being sold at £8 10s. ($31.11) f.o.b. for October and November shipment. German plates are being sold at £7 15s. (1.27c. per lb.) f.o.b. for October shipment. German steel strip is quoted at £11 10s. (1.88c. per lb.) f.o.b., for shipment in 18 weeks.

French 2-in. billets are being sold at £6 8½s. ($23.52) f.o.b., and Luxemburg billets at £6 10s. ($23.79) c.i.f. Newport. Australia is buying fair supplies of Belgian and Luxemburg steel, owing to the prohibition against the importation of German material.

Settlement of the ship joiners' strike has been made,

with an immediate wage reduction of 3s. (55c.), and with further reductions to go into effect in October and December. Sheffield steel furnacemen's wages have been reduced 17½ per cent.

Tin plates are quiet after the revival of demand from the Far East. Business is being done at 23s. ($4.21) f.o.b. for September and October. Some business is reported in oil sizes. Quarter wasters are being sold at 17s. ($3.11) f.o.b. Some mills are starting up again, while others are closing after completing their rolling programs. The Welsh output is about 30 per cent of normal. Small sales are reported of galvanized sheets to India, at around £21 (3.43c. per lb.) f.o.b., but there is little demand in other markets. Belgium is quoting £11 10s. (1.88c. per lb.) f.o.b. for 18-gage black sheets.

We quote per gross ton except where otherwise stated, f.o.b. maker's works, with American equivalent figured at $3.66 per £1 as follows:

Durham coke, at ovens	£1 15		$6.40
Cleveland basic	7	7½ & £7 10*	26.99 & $27.45
Cleveland No. 1 foundry	7	0	25.62
Cleveland No. 3 foundry	6	15	24.70
Cleveland No. 4 foundry	6	10	23.79
Cleveland No. 4 forge	5	17½	21.50
Hematite	7	0*	25.62
East Coast mixed	8	0 & 7 15*	29.28 & 28.36
Ferromanganese	18	0 & 14 0*	65.88 & 51.24
Rails, 60 lb. and up	10	10 to 14 0	38.43 to 51.24
Billets	8	0 to 8 10	29.28 to 31.11
Sheet and tin plate bars, Welsh	8	0 to 8 10	29.28 to 31.11
Tin plate base box	1	2½ to 1 4½	4.12 to 4.48
			C. per lb.
Ship plates	14	0	2.29
Boiler plates	19	0 to 20 0	3.10 to 3.27
Tees	14	0 to 14 10	2.29 to 2.37
Channels	13	5 to 13 15	2.16 to 2.25
Beams	13	0 to 13 10	2.12 to 2.21
Round bars, ⅜ to 3 in.	13	0 to 13 10	2.12 to 2.21
Galvanized sheets, 24 g.	21	0 to 21 10	3.43 to 3.51
Black sheets	17	0	2.78
Steel hoops	17	0	2.78
Cold rolled steel strip, 20 g.	26	10	4.33

*Export price.

Keen Competition in Pig Iron from the Continent—Resumption of Plants Slow

LONDON, ENGLAND, Aug. 11.—There is no marked improvement in general trade conditions. Prices are gradually getting down to a more reasonable basis on which this country will be in a better position to compete for overseas trade. Labor is settling down and accepting the inevitable in reduced wages, and the necessity for work, production and reasonable prices are apparently being realized.

The signs apparent recently of an awakening of business in the East are further confirmed, and inquiries and orders for various material are appearing. Orders have been coming in for galvanized sheets, for example, from both India and South America. At the same time it is realized that it will probably be a long time before trade really recovers to anything like normal conditions here.

Up to the present the pig iron markets have been extremely dull. Demand was not particularly good; continental competition was keen, and in view of the high price of fuel, ironmasters here saw little object in starting their works when they could not possibly produce iron at a competitive price. This is illustrated by the fact that the large plant of the Staveley Coal & Iron Co. is out of commission, and there is no output of coke, by-products or pig iron. Some of the foundries, it is understood, have been kept going, but only because Belgian pig iron could be bought, and a managing director stated that to-day labor alone on a ton of pig iron costs £4 15s., while it is possible to buy iron from Belgium at £5 17s. delivered. In addition, the Belgians are working longer hours. He further stated that if the company started its furnaces they would lose 15s. per ton on all coke produced, and between £2 to £3 per ton on pig iron.

A step has now been taken, however, toward getting the cost of production of both pig iron and steel down, a reduction of 15s. per ton having been made in Midland furnace coke. This makes the new quotation 30s. per ton at the ovens. At the same time a decrease of 8s. per ton in the price of Welsh coal is reported.

While export prices here are being shaded, there is no doubt that the bulk of the business is going to the continent. Indeed, German bar makers seem to have booked themselves up so well that they are now less keen sellers, and 10 to 12 weeks are required for delivery. Belgian prices meanwhile are high and, owing to the scarcity of orders, works are in some cases only working part time. The bulk of the business in finished continental material is for export, home buying in this country still being dull.

There is nothing new in the shipbuilding situation. There is still a fair amount of work on hand, but new orders are few. It is interesting to note that the firm of Sir W. G. Armstrong Whitworth & Co. state that on March 22, this year, their output had reached 3,000,000 tons of shipping. The company has now completed 1000 vessels, of which 800 are passenger and merchant ships.

GERMAN PRICES STRONG

Export Business Continues to Increase Particularly with Holland and Scandinavia—Upper Silesia Buys

(By Aerial Mail to London)

BERLIN, GERMANY, Aug. 10.—With the extraordinary rise in prices during the past fortnight consumers have adopted a more reticent attitude and jobbers, on the contrary, are buying up large stocks in anticipation of further advances. Consumers complain that while prices during the past months have been on a rather low level, the recent feverish advances are not justified by prevailing conditions.

Prices continued strong throughout the past week, and in some instances further advances were registered. In the pig iron market the reduced prices for French and Luxemburg iron could not keep pace with the depreciation of the mark. Export business is increasing, rolled material, especially bars, being particularly in demand from Holland and Scandinavian countries. Semi-finished material has improved, but the pipe market is weaker with the exception of boiler tubes. The wire market reports increasing demand with prices tending upward.

Rather encouraging reports are coming in from the Upper Silesian market, where comparative order has been restored and customers are beginning to place orders. Although regular railroad service has been interrupted for two months, production has continued on a small scale and enormous stocks have accumulated which are being cleared off with prices rapidly recovering and few concessions.

Quotations are as follows, per metric ton:

	Marks	(At 1.14c.)
Bar iron	2050	$23 37
Structural shapes	2000	22.80
Tees and channels	2200	25.08
Squares	2250	25.65
Flats and angles	2200	25.08
Concrete bars	1950	22.23
Hoop iron, non-punched material	3500	39.90
Rails, heavy	2400	27.36
Mine rails, including fishplates	2000	22.80
Sheets, heavy	1900	21.66
Sheets, medium	1960	22.34
Sheets, black, according to gage	3100-3400	$35.34 to 38.76
Sheets, double, planished for stamping	4000-4200	45.60 to 47.88
Sheets, galvanized, according to gage	3000-6000	34.20 to 68.40
Plates, light	2300	26.22
Sheet bars	1500-1700	17.10 to 19.38
Billets, open-hearth	1680	19.15
Billets, basic	1550	17.67
Wire rods	2050	23.37

	Marks	Cents per Lb.
Wire nails, per 100 kg	270	1.4
Wire, galvanized, per 100 kg	290	1.5
Rivet and bolt stock, per 100 kg	250	1.26
Barbed wire, closely spaced, per 100 kg	320	1.66

Pipe and Boiler Tubes

	Marks per Metre	Cents per Ft.
Boiler tubes, 2⅜ in., per metre	25	8.7
Boiler tubes, 4 in., per metre	75	26.1
Cast iron pipe and sockets, 1-ft. dia.	240	83.5
Gas pipes, ¾ in., per metre	7.30	2.5
Gas pipes, 1¼ in., per metre	13.25	4.6
Gas pipes, ⅜ in., galvanized, per metre	6.90	2.4
Gas pipes, 1 in., galvanized, per metre	15.50	5.4

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia	$0.35	St. Paul	$0.665
Baltimore	0.335	Omaha	0.815
New York	0.38	Omaha (pipe)	0.77
Boston	0.415	Denver	1.35
Buffalo	0.295	Denver (wire products)	1.415
Cleveland	0.24	Pacific Coast	1.665
Cincinnati	0.325	Pacific Coast, ship plates	1.335
Indianapolis	0.345	Birmingham	0.765
Chicago	0.38	Jacksonville, all rail	0.555
St. Louis	0.475	Jacksonville, rail and water	0.46
Kansas City	0.815	New Orleans	0.515
Kansas City (pipe)	0.77		

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, $1; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Structural material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 1.80c. to 1.85c.

Wire Products

Wire nails, $2.75 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.25 and shorter than 1 in., $1.75; bright Bessemer and basic wire, $2.50 per 100 lb.; annealed fence wire, Nos. 6 to 9, $2.50; galvanized wire, $3; galvanized barbed wire, $3.40; galvanized fence staples, $3.40; painted barbed wire, $2.90; polished fence staples, $2.90; cement-coated nails, per count keg, $2.35; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 68 to 70½ per cent off list for carload lots, 67 to 69½ per cent for 1000-rod lots, and 66 to 68½ per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$2.35 to $2.50
Large boiler rivets..... 2.45 to 2.60
Small rivets ....65, 10, 10 and 5 to 70, 10 and 10 per cent off list
Machine bolts, small, rolled threads,
70 and 7½ to 70 and 10 per cent off list
Machine bolts, small, cut threads,
65 and 10 to 70 and 5 per cent off list
Machine bolts, larger and longer,
65 and 10 to 65, 10 and 5 per cent off list
Carriage bolts, ⅜ in. x 6 in.:
Smaller and shorter rolled threads..65 and 10 per cent off list
Cut threads .....60 and 10 per cent off list
Longer and larger sizes.....60 and 10 per cent off list
Lag bolts .....70 and 5 to 70 and 10 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....60 and 10 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ in. x 4 in.:
Smaller and shorter.....60 and 5 per cent off list
Larger and longer sizes.....60 per cent off list
Hot pressed sq. or hex. blank nuts.....$4.60 to $5.25 off list
Hot pressed nuts, tapped..... 4.25 to 5.00 off list
C.p.c. and t. sq. or hex. blank nuts..... 4.60 to 5.10 off list
C.p.c. and t. sq. or hex. blank nuts, tapped. 4.25 to 4.75 off list
Semi-finished hex. nuts:
¼ in. to 9/16 in. inclusive.....80, 10 and 10 per cent off list
Small sizes S. A. E.....80, 10, 10 and 10 per cent off list
⅝ in. to 1 in. inclusive, U. S. S. and S. A. E.,
70, 10, 10 and 10 per cent off list
Stove bolts in packages.....80 and 10 per cent off list
Stove bolts in bulk.....80, 10 and 2½ per cent off list
Tire bolts .....65, 10 and 10 per cent off list
Track bolts .....3.50c. to 3.75c. base

Mill Square and Hex. Head Cap Screws

¼ in. and under.....70 and 10 per cent off list
9/16 in. to ¾ in.....70 and 10 per cent off list

Mill Set Screws

¼ in. and under.....70, 10 and 5 per cent off list
9/16 in. to ¾ in.....70, 10 and 5 per cent off list

Rivets

Rivets, 1c. per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs, 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $42; chain rods, $42; screw stock rods, $47; rivet and bolt rods and other rods of that character, $42; high carbon rods, $50 to $54, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, $2.50 to $2.60 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ⅝-in. and 7/16-in., $2.75 base; 5/16-in., $2.75 base. Boat and barge spikes, $2.75 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, $3.50 to $3.75 base per 100 lb. Tie plates, $2 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., $11.30 per package; 8-lb. coating, I. C., $11.60; 15-lb. coating, I. C., $14.30; 20-lb. coating, I. C., $15.55; 25-lb. coating, I. C., $16.80; 30-lb. coating, I. C., $17.80; 35-lb. coating, I. C., $18.80; 40-lb. coating, I. C., $19.80 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars, 1.75c. from mill. Refined bar iron, 2.25c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛	50½	24	¼ to ⅜	+ 1½	+27½
¼ to ⅜	53½	27	½	31½	13½
½	58½	44	¾	37½	22½
¾	62½	50	1 to 1½	39½	24½
1 to 3	64½	52			

Lap Weld

2	56½	44	2	34½	20½
2½ to 6	60½	48	2½ to 6	37½	24½
7 to 12	57½	44	7 to 12	35½	22½

Butt Weld, extra strong, plain ends

⅛	46½	29	¼ to ⅜	+ 9½	+42½
¼ to ⅜	49½	32	½	30½	18½
½	55½	44	¾	37½	23½
¾	60½	49	1 to 1½	39½	25½
1 to 1½	62½	51			
2 to 3	63½	52			

Lap Weld, extra strong, plain ends

2	54½	43	2	35½	22½
2½ to 4	58½	47	2½ to 4	38½	26½
4½ to 6	57½	46	4½ to 6	37½	25½
7 to 8	53½	40	7 to 8	30½	18½
9 to 12	48½	35	9 to 12	25½	13½

To the large jobbing trade the above discounts are increased by one point, with extra discounts of 5 and 2½ per cent.

Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		*Charcoal Iron*	
1¾ in.	21½	1½ in.	List
2 to 2¼ in.	36	1¾ to 1⅞ in.	10
2½ to 3 in.	47	2 to 2¼ in.	20
3¼ to 13 in.	52	2½ to 3 in.	25
		3¼ to 4½ in.	27

Standard Commercial Seamless Boiler Tubes

New discounts have been adopted on standard commercial seamless boiler tubes, but manufacturers are not yet ready to announce them for publication, and for that reason we publish no discounts this week.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed

Cents per Lb.		Cents per Lb.	
No. 8 and heavier	2.15–2.30	Nos. 11 and 12	2.35–2.50
Nos. 9 and 10 (base)	2.25–2.40	Nos. 13 and 14	2.45–2.60
		Nos. 15 and 16	2.55–2.70

Box Annealed, One Pass Cold Rolled

Cents per Lb.		Cents per Lb.	
Nos. 17 to 21	2.45–2.70	No. 28 (base)	2.75–3.00
Nos. 22 to 24	2.50–2.75	No. 29	2.85–3.10
Nos. 25 and 26	2.65–2.90	No. 30	2.95–3.20
No. 27	2.70–2.95		

Galvanized

Cents per Lb.		Cents per Lb.	
Nos. 10 and 11	2.75–3.00	Nos. 25 and 26	3.45–3.70
Nos. 12 to 14	2.85–3.10	No. 27	3.60–3.85
Nos. 15 and 16	3.00–3.25	No. 28 (base)	3.75–4.00
Nos. 17 to 21	3.15–3.40	No. 29	4.00–4.25
Nos. 22 to 24	3.30–3.55	No. 30	4.25–4.50

Tin-Mill Black Plate

Cents per Lb.		Cents per Lb.	
Nos. 15 and 16	2.55–2.80	No. 28 (base)	2.75–3.00
Nos. 17 to 21	2.60–2.85	No. 29	2.80–3.05
Nos. 22 to 24	2.65–2.90	No. 30	2.80–3.05
Nos. 25 to 27	2.70–2.95	Nos. 30½ and 31	2.85–3.10

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin	Lead		Zinc	
Aug.	Lake	Electro-lytic	New York	New York	St. Louis	New York	St. Louis
17	12.00	11.75	25.62½	4.40	4.25	4.70	4.20
18	12.00	11.75	25.75	4.40	4.25	4.70	4.20
19	12.00	11.75	26.00	4.40	4.25	4.70	4.20
20	12.00	11.75	.....	4.40	4.25	4.70	4.20
22	12.00	11.75	26.00	4.40	4.25	4.67½	4.17½
23	12.00	11.75	26.12½	4.40	4.25	4.67½	4.17½

New York

NEW YORK, Aug. 23.

The markets are prcatically all marking time with demand light and prices unchanged. Buying of copper does not improve. Transactions in tin have been of good proportions. The lead market is very quiet but exceedingly firm. There is no improvement in the demand for zinc and prices have eased slightly.

Copper.—There is practically no change in the general situation, some of the large producers still remaining out of the market, while two or three others are taking such business as is offered at 11.75c., New York, or 12c., delivered, for early delivery. While there have been a few small sales, made slightly below this level, the foregoing quotations are regarded as the minimum for any substantial business. Domestic demand is light and foreign demand is not much better, although Japan has been a consistent buyer to the extent of several thousand tons in the last two or three weeks. Demand for Lake copper is light and prices are nominal.

Tin.—Importers of tin state that sales last week were exceedingly good, amounting to close to 500 tons future shipment Straits tin at advancing prices. On Wednesday, Aug. 17, 300 to 400 tons was sold, mostly to consumers, part of them located in the interior, but on the two following days the market was dull and nominal. On Saturday, however, about 100 tons is reported to have been sold, also future shipment metal. Spot Straits tin has been firm but neglected, with the quotation to-day at 26.12½c., New York. The market as a whole yesterday and to-day has been inactive and nominal. Prices in London to-day are about on a level with those reported a week ago. Arrivals thus far this month have been 1785 tons, with 3055 tons reported afloat.

Lead.—A fairly steady demand from consumers is reported by most sellers with prices firm. Exactly two months ago to-day the leading interest established its New York and St. Louis price at 4.40c., at which level it has continued until the present time. The outside market is on the same level in this market, but the metal can be purchased from independents at St. Louis at 4.25c.

Zinc.—The market continues extremely quiet and reports that some business has been done under the quotation which has prevailed for several weeks are confirmed. It develops that prime Western for early delivery is obtainable at as low as 4.17½c., St. Louis, or 4.67½c., New York, which we quote as the market.

Old Metals.—The market has quieted down again and business is practically impossible. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	11.50
Copper, heavy and wire	10.75
Copper, light and bottoms	9.00
Heavy machine composition	9.75
Brass, heavy	6.75
Brass, light	5.00
No. 1 red brass or composition turnings	7.75
No. 1 yellow rod brass turnings	4.50
Lead, heavy	3.75
Zinc	3.00
Lead, tea	3.00

Antimony.—Wholesale lots for early delivery are still obtainable at 4.50c., New York, duty paid.

Aluminum.—The leading producer continues to quote 24.50c., f.o.b. plant, for wholesale lots of virgin metal, 98 to 99 per cent pure, for early delivery and the same grade from importers can be purchased as low at 19c. to 20c., New York, duty paid.

Chicago

AUG. 23.—The metals are very dull and copper and tin have weakened slightly. Old metal prices are unchanged. We quote Lake copper at 12.25c. to 12.50c. in carload lots; tin, 28.25c.; lead, 4.35c.; spelter, 4.30c.; antimony, 7.50c. On old metals we quote: Copper wire, 7c.; crucible shapes, 7c.; copper clips, 7c.; copper bottoms, 6c.; red brass, 6c.; yellow brass, 4.50c.; lead pipe, 2.50c.; zinc, 1.75; pewter, No. 1, 17c.; tin foil, 18c.; block tin, 20c. All buying prices for less than carload lots.

St. Louis

AUG. 23.—In none of the non-ferrous metals is there any demand. Lead is quoted at 4.25c., car lots and zinc at 4.20c. We quote Lake copper, car lots, at 12.73½c. to 12.98½c.; tin, 26.86c.; antimony, 5.23½c. On old metals, we quote: Light brass, 3.50c.; heavy yellow brass, 5c.; heavy red brass, heavy copper and copper wire, 7.50c.; light copper, 6.50c.; block tin, 20c.; tin foil, 18c.; zinc, 2.75c.; lead, 3c.; tea lead, 2c. and aluminum, 9c.

Production and Shipments of Refractory Brick

PITTSBURGH, Aug. 22.—Figures of production and shipments of fire clay and silica brick for the month of July, and stocks on hand and unfilled orders as of July 31, have just been released by the Refractories Manufacturers' Association. The figures are compiled from reports of all manufacturers regardless of whether they are members of that association or not, and cover, as nearly as it is possible to do so, the entire industry. It is interesting to note that shipments and production of fire clay brick were identical during July, indicating that manufacturers finally have been able to make output conform to demand. Shipments of silica brick in July exceeded production by 1,825,000, this resulting in a reduction in the stocks on hand. The figures follow:

	Fire Clay Brick	Silica Brick
Production	31,893,750	2,555,000
Shipments	31,893,750	4,380,000
Stock on hand	207,900,000	57,870,000
Unfilled orders	38,981,250	16,060,000

Bureau of Standards Tests Canadian Meter Bar

One of Canada's official standards of length, a meter bar that had been calibrated at the International Bureau of Weights and Measures in Paris, has been in Washington at the Bureau of Standards where it was compared with the official length standards of this country.

The Canadian meter bar is made of invar, an alloy of nickel and steel that changes only slightly in length with variation in temperature. This bar has made the trip to Washington in previous years for comparison with the American standards, and the Topographic Survey Laboratory of Ottawa is now obtaining several other standard bars from the International Bureau so that they may be used in checking the accuracy of the rules, yardsticks, tapes, and other length-measuring instruments of that dominion.

Comparisons were made between the four platinum-iridium meter bars that are official standards of this country and the Canadian bar.

While only 43.3c. of each $1 of railroad gross revenue went for railroad wages in 1917, 59.9c. was labor's toll in 1920.

PERSONAL

Allen G. Goldsmith, Milwaukee, who during the period of 1911-1917 was associated with the American Rolling Mill Co., Middletown, Ohio, in various capacities up to department manager, has been appointed to take charge of the western European division of the Bureau of Foreign and Domestic Commerce. He was educated in the public schools of Chicago and at Kenyon College. He has also studied in Berlin. From 1917-1919 he served in the army as second lieutenant, and finally as secretary of the general staff of the 83d division. On April 1, 1919, he was detailed to the American Relief Administration as executive officer, and later was appointed chief of the Roumanian mission with headquarters in Bucharest.

Chester Lloyd Jones, of Orange, N. J., has been appointed acting American Commercial Attache to Cuba, and will make his headquarters with General Crowder in Havana. This is the first time the Department of Commerce has been represented in Cuba, which is described as the best market for American goods in all of the Latin-American countries. Mr. Jones represented the Department of Commerce in Spain, as commercial attache, in 1919. He will devote his time in Cuba to the development of American trade. He has given considerable study to commercial conditions in Latin-American countries, and in 1920-21 was employed as trade advisor and director of C. Tennant Sons & Co., New York. His educational and training experience was obtained at the University of Wisconsin, the University of Pennsylvania, the University of Berlin and University of Madrid.

C. A. Ducharme, formerly with Republic Iron & Steel Co., is now associated with the iron and steel firm of J. Edward Grinfield-Coxwell, 40 Central Street, Boston, as sales agent.

William C. Reilly, general superintendent of the Youngstown Sheet & Tube Co., Youngstown, Ohio, has been selected by the provincial Government of Nova Scotia as its representative in arbitration proceedings with the Dominion Steel Co., involving settlement for steel used during the war aggregating $9,000,000. During the war, the Dominion Steel Co. erected a large plate mill at the request of the government and entered into a contract for plates for military purposes. When the armistice was signed the contract was half completed and the government having no further use for the plates, cancelled its contract. In the interim efforts have been made between the company and the Government of Nova Scotia to agree upon an amicable settlement, but without avail. Mr. Reilly has gone to Sydney, N. S., where the plate mill is located, to meet with representatives of the company.

M. L. Filley has joined with Barnard Eberlin, under the firm name of Filley & Eberlin, to act as district sales agents at 50 Church Street, New York, for the Superior Sheet Steel Co., Canton, Ohio. The firm will occupy the same offices Mr. Filley is now using as manager of the New York office of the American Zinc Products Co., maker of slab zinc and sheet zinc, Greencastle, Ind. Mr. Filley was for years Eastern sales representative of the Deforest Sheet & Tin Plate Co., Niles, Ohio, until it was sold to the Republic Iron & Steel Co. Mr. Eberlin was connected with the Merchant & Evans Co., New York, from 1910 to 1917, when he joined the United States Army, participating in the campaigns in France as a captain of infantry. On his return he rejoined the Merchant & Evans Co. as sales representative in Cleveland and vicinity. Mr. Eberlin will be associated with Mr. Filley in the New York office of the American Zinc Products Co., where Willard Fisher will continue to act as Eastern sales manager.

B. G. Dann, for the past four years connected with the engineering department of the Truscon Steel Co. in Youngstown, Ohio, and New York, has resigned to become manager of the New York office, 30 Church Street, of the Hendrick Manufacturing Co., maker of perforated metal screens, elevator buckets, general sheet and light structural work, and also light and heavy steel plate construction. He is a graduate of the engineering department of Lafayette College. B. G. Shotton is the manager of the Pittsburgh office of the Hendrick company, located in the Union Bank Building.

E. A. Woodworth, formerly railroad representative, Imperial Belting Co., Chicago, has resigned to take charge of southwestern territory for the United States Metallic Packing Co., Philadelphia, with headquarters at Chicago.

W. M. Dambach, designing and consulting engineer, formerly associated with Hazel-Atlas Glass Co., Wheeling, W. Va., has become affiliated with the Carlem Engineering Co., Keystone Bank, Pittsburgh, as vice-president. For a number of years he was assistant superintendent of construction of the Pittsburgh board of education.

J. W. Hocking, secretary Wheeling Steel Corporation, Wheeling, W. Va., who resigned recently, was secretary of the Whitaker-Glessner Co. prior to the combination of that company with the Wheeling Steel & Iron Co. and LaBelle Iron Works, into the Wheeling Steel Corporation.

Clarence T. Warner, general manager of the Michigan State Investment Co., Benton Harbor, Mich., has resigned to become president of the new Warner Auto Equipment Co., Benton Harbor, which will manufacture a new shock absorber. This article is now being manufactured in the plant of the National Axle Co., Benton Harbor, but the company plans soon to obtain its own factory.

J. T. Kane has been appointed warehouse superintendent for the Sheet Metal Mfg. Co., Youngstown, Ohio, which recently completed a new warehouse at the westerly city limits of Youngstown, near the plate mills of the Brier Hill Steel Co. He was formerly superintendent in charge of shipping for the Trumbull Steel Co., Warren, Ohio.

John C. Robinson, after 30 years' continuous service as manager of New England sales for William Wharton, Jr., & Co., Inc., has resigned and will devote himself to his interests in the firm of Harrington, Robinson & Co. of Boston. The office of the Taylor-Wharton Iron & Steel Co. and of William Wharton, Jr., & Co., Inc., in the future will be located at room 235, Boston Safe Deposit Building, 201 Devonshire Street, in charge of Walter H. Allen.

Fall Meeting of Iron and Steel Institute in Paris

The fall meeting of the Iron and Steel Institute will be held at the headquarters of the Comité des Forges de France, 7, Rue de Madrid, Paris (in close proximity with the Gare St. Lazare), on Monday and Tuesday, Sept. 5 and 6. At the conclusion of the meeting alternative visits have been arranged to works in Lorraine, in Burgundy and in Normandy. The following is the list of papers which it is expected will be submitted:

"Damascene Steel," by N. T. Belaiew, C. B.

"An Experimental Investigation of the Mechanical Properties of Steels at High Temperatures," by E. L. Dupuy.

"The Situation of the French Metallurgical Industry in the North and in the East of France; Its Destruction and Reconstruction," by L. Guillet.

"Does the Critical Point Depend on the Strength of the Magnetizing Field?" by K. Honda.

"On Constituents Found in Tungsten and Molybdenum Steels," by A. Portevin.

"A Contribution to the Study of Coalescence," by A. Portevin and V. Bernard.

"On the Characteristic Curves of the Heat Treatment of Steels," by A. Portevin and P. Chevenard.

"Iron Ore Deposits of Eastern and Western France," by P. Nicou.

"An Investigation of Various Forging Operations Carried Out Under Hydraulic Presses," Part II, by E. Schneider.

"Manufacture of Shells in Canada During the War, 1914-1918," by Capt. H. W. B. Swabey, C.B., and R. Genders, M.B.E.

OBITUARY

ROBERT TEN EYCK LOZIER, aged 53, consulting engineer, died of pneumonia on Aug. 21 at the Post Graduate Hospital, New York. He was a pioneer in the development of electrical power, entering the employ of Thomas A. Edison at the age of 14. He had taken out many electrical patents and for the last fifteen years had been a consulting engineer. During the war he was in charge of hydroplane construction at the League Island Navy Yard, Philadelphia. He was a member of the Engineers Club of New York, a Fellow of the American Institute of Electrical Engineers and a life member and past president of the New York Electrical Society.

ALFRED D. BAUER, president Technical Advertising Service, Inc., New York, died from injuries received in an automobile accident at Stamford, Conn., on Aug. 13. For 19 years he had been connected with the advertising profession and before organizing the Technical Advertising Service he was advertising manager of *Chemical and Metallurgical Engineering*. He was born in Bremen, Germany, 42 years ago and was a graduate of the University of Baden. Mr. Bauer was among the first to recognize the possibilities of an advertising service devoted entirely to engineering products and carried on by engineers and merchandising experts.

JAMES HENRY TOWER, president and director James H. Tower Iron Works, Providence, R. I., fabricators, died Aug. 13 at his home in Wakefield, R. I., after a long illness. He was born in Providence, May 23, 1846, and was graduated from Brown University of that city. Early in his life he was active in city politics. He is survived by a daughter, Mrs. Benjamin P. Harris, and two sons, Louis P. and James Henry Tower.

WALTER N. LOWELL, superintendent Waterbury Brass Co., Waterbury, Conn., who died at his home, 166 Bunker Hill Street, following a long illness, was superintendent of the Waterbury Brass Co. for thirty years. He was born at New Bedford, Mass, July 22, 1852, and previously was associated with the Pratt & Whitney Co., Hartford, Conn.

CHANDLER ROBBINS, formerly president Robbins & Myers Co., Springfield, Ohio, died in a hospital at Baltimore, Md., on Aug. 18, of pulmonary embolism. He was 77 years old and had been ill only 10 days.

WALLACE D. GLIDDEN, assistant treasurer the Kewanee Boiler Co., Kewanee, Ill., died suddenly at Boulder Junction, Wis., on Aug. 13.

WILLIAM HENRY WARRINGTON, president the Vulcan Iron Works, Chicago, died in that city on Aug. 11, at the age of 75.

JOHN KRYL, president Pilsen Foundry & Machine Works, Chicago, died in that city on Aug. 15, at the age of 53.

Merger of Massillon Companies

The merger of the Massillon Rolling Mill Co. and National Pressed Steel Co., Massillon, Ohio, with the Central Steel Co., Massillon, was approved at a meeting of the stockholders of the three companies Aug. 18. The combination will be effected in accordance with the terms recently agreed upon by the boards of directors of the three companies. The merger involves about $18,000,000, as represented by the combined capital stock of the three companies. R. E. Bebb, president of the Central Steel Co., will be at the head of the combined organization.

The last issue of the *Commonwealther*, the plant publication of the Commonwealth Steel Co., reports an address of President Clarence H. Howard to the company's employees describing his European trip of the early summer. Mr. Howard was a delegate to the International Chamber of Commerce.

Reduction in Steel Corporation Wages

Chairman Elbert H. Gary of the United States Steel Corporation announced on Friday, Aug. 19, a reduction in day labor rates from 37 cents to 30 cents an hour, effective Monday, Aug. 29.

This wage cut is equivalent to a reduction of nearly 20 per cent from the rate established July 16 when time and one-half for work over 8 hr. per day was abolished although no change in the 37 cents an hour rate was made at that time. Other wages and salaries will be equitably adjusted to the new rate for day labor. Judge Gary's statement follows:

"In view of the prevailing low selling prices of steel as compared to costs of production, it is necessary to make reductions in wage rates, and therefore we will recommend to subsidiary companies that the general rates of day labor be decreased to 30 cents per hour, to become effective on Monday, Aug. 29, and that other wages and salaries be equitably adjusted."

Following table shows the wages of common labor after each advance or decrease in wages by the United States Steel Corporation, the percentage of each advance or decease, and the cumulative percentage of each advance or decrease over the 1915 rate:

Date	Wages 10 Hr.	Date	Wages 10 Hr.
1915	$2.00	Aug. 1, 1918	4.20
Feb. 1, 1916	2.20	Oct. 1, 1918	*4.62
May 1, 1916	2.50	Feb. 1, 1920	5.08
Dec. 15, 1916	2.75	May 16, 1921	†4.05
May 1, 1917	3.00	July 16, 1921	†3.70
Oct. 1, 1917	3.30	Aug. 29, 1921	3.00
Apr. 16, 1918	3.80		

*Eight-hour basic day established and time and one-half paid for overtime.
†Approximated.

Pittsburgh View of Wage Cut

PITTSBURGH, Aug. 22.—Announcement by the Steel Corporation of its intention to reduce the wages and salaries came as no great surprise to the trade here, as it had been figured that eventually the corporation must come down to the independent company schedules. Although higher efficiency is claimed for corporation plants than for a number of the independents, it was quite generally believed that this condition hardly would overcome the difference between Steel Corporation and independent scales, with the corporation meeting the independent selling prices. The belief is pretty general that present steel prices are as low as they can consistently go, barring a cut in cost in the shape of lower freight rates, and because of that feeling few are inclined to believe that the wage reduction will be productive of a formal downward revision of prices. The more common expression is that the corporation merely is matching wages to the selling prices it is obliged to accept in competition with independent companies.

No Wage Cuts Contemplated by Independents

YOUNGSTOWN, Aug. 23.—In normal times, about 6000 employees of the Carnegie Steel Co. in the Youngstown district would be affected by the wage reduction effective Aug. 29. The new common labor rate of 30c. an hour is the same as that paid by the independents since July 16.

Owing to the scarcity of employment, independents experienced no difficulty in getting workmen even at the lower rate. While a number of Eastern independents have reduced the day labor wage to 27c. an hour, no further cut is contemplated at present by independent interests in this district. In Canton, Ohio, a number of steel plants are paying 27c. per hr. Valley steel makers look for closer competition in prices from the leading interest as a result of the wage adjustment.

The Reeves Pulley Co., Columbus, Ind., has arranged with Manning, Maxwell & Moore, Inc., 119 West Fortieth Street, New York, whereby the latter assumes the exclusive agency for the Reeves variable speed transmission in the New York territory. Repair parts will be carried and transmissions of various sizes and classes as well as the Reeves wood split pulley will be kept in stock.

YOUNGSTOWN MARKET

August Bookings Exceed Those of Any of Four Preceding Months

Inasmuch as it was generally expected that improvement in the steel industry would be mixed with periods of recession, little surprise is expressed at indications of letting down in buying. James A. Campbell, president Youngstown Sheet & Tube Co., warns against over-optimism, although he believes September will prove a satisfactory month. Tonnage booked by Valley interests in August has exceeded that placed in any of the four previous months, and in some lines has exceeded purchases of any month this year. Severn P. Ker, president Sharon Steel Hoop Co., anticipates a bigger volume of business in September than in August and looks for general improvement.

While jobbing interests have been placing some tonnage, it has been largely against current requirements and there has been little effort to build up depleted or unbalanced stocks. Sheet buying is in smaller volume than has prevailed. Recent business placed with Valley producers involved upward of 1800 tons of black sheets, accepted at 2.90c. base, or 10c. per 100 lb. below the current market. The buyer is regarded as a careful student of the market and declares that sheets at 2.90c. are cheaper than they were at 1.75c. before the war. Other lots ranging from 50 to 200 tons have been placed with district interests, including tonnages for shipment to Japan. On the whole, the market is active, though buying is chiefly for small tonnages.

Inasmuch as shipments are being currently made from stock accumulations, not only in sheets, but in other finished commodities, prompt consignments are possible. Frequently a telegraphic order is filled the same day it is received. Because certain gages of sheets have been exhausted, some makers have been compelled to turn down business recently, especially in galvanized sheets, through inability to meet delivery requirements.

More inquiries are circulating through the trade for by-product coke, presaging more active blast furnace production. One such inquiry put out by the American Rolling Mill Co. calls for 14,000 tons of coke. A Cleveland interest is also in the market for coke for one of its furnaces, which has been idle all summer. A Valley interest reports the purchase of first-grade coking coal at $1.60.

Strengthening of the basic pig iron and the old materials markets has been one of the constructive developments of the past two weeks, say Valley steel makers. Scrap grades have generally firmed up an average of $1 per ton. An average quotation on basic iron is now $20, which compares with a recent low of $18, at which a number of 1000-ton lot purchases were made by the Sharon Steel Hoop Co. before it started its own furnace at Lowellville. Steelworks interests operating blast furnaces state there is firmer demand from the foundry trade than heretofore, and that foundry iron stocks have generally been reduced to low levels.

Plate buying is in sufficient volume to keep one of four mills in this district partially engaged. The price range is from 1.70c. to 1.80c. in the Valley, though makers in nearby districts are reported to have accepted tonnage at 1.60c. Most of the current business is from car repair concerns. Recent inquiries included one for 250 tons of plates for railroad car repair work, and 1500 tons of ½-in. plates for fabrication.

Sheet prices are still uncertain, the market ranging from 2.75c. to 3c. for black and 3.75c. to 4c. for galized, while blue annealed has dipped to 2.25c. and ranges up to 2.40c. Some makers contend that the 2.75c. price for black sheets is more attractive than the 3.75c. quotation for galvanized owing to the fact that galvanizing cost is more than 1c. per lb. Full finished sheets are firm with the principal maker in this territory at 4.70c. for 22-gage auto body stock, which is a differential over black of from 1.70c. to 1.90c., though 1.35c. is the recognized spread.

Sustained demand for strip steel is one of the bright features of the market in the Mahoning Valley, being sufficient to support production at an average rate of 50 to 60 per cent. Concessions from recent levels are more frequent, cold-rolled ranging from 3.85c. to 4c. and hot-rolled selling down to 2.25c., from 2.40c., base sizes. An inquiry before the trade this week called for four carloads. Most of the production is going to the automobile trade, though hardware manufacturers and makers of electrical appliances have likewise been seeking tonnage.

Pipe business has been accelerated due to activity of jobbers in filling up pipe stocks. Five of six buttweld furnaces of one interest have been fired, while the tube department of another maker has been operating at 50 per cent. Demand is usually in carload lots. There is little buying of oil country goods or line pipe and the usual discounts are being closely observed.

New business in tinplate is largely lacking with exception of scattered inquiries from oil companies. Regular customers are specifying slowly against existing contracts. Stock plate continues to be quoted at $4.75 per base box and production plate at $5.25.

PRE-WAR AND PRESENT PRICES

Steel as Low Today as in 1910-14, Considering Freight and Wage Advances

YOUNGSTOWN, OHIO, Aug. 23.—Prices of steel commodities, both finished and semi-finished, are as low as, or lower than, actual average prices during the five-year period 1910 to 1914 inclusive, considering the difference in production costs due to the higher freight charges and higher wages of to-day. The sales executive of an important independent producer in this city makes this statement as the result of a recent study. Transportation rates are from 100 to 115 per cent higher than they averaged during the five-year period.

Freight charges on iron ore from mines on the Mesabi range to Youngstown averaged $1.81 from 1910 to 1914, whereas the current freight rate is $2.93 for the same haul, plus war tax of $.0879 per ton, or a total of $3.01. Similarly, the freight rate on coke from the Connellsville district to the Mahoning Valley averaged $1.20 per ton in the five-year period, whereas the present charge is $2.60, including tax of 8c.

The present freight rate (with tax) of $1.55 per ton on coal from the Pittsburgh district to the Valleys compares with 70c. in 1910 to 1914. On limestone the freight rate from Hillsville to Youngstown, plus tax, amounts to 86.5c., as compared with 34.5c. The current carrying charge on coal per ton from the Connellsville district to Youngstown is $1.627, compared with 85c.; freight charges on ferromanganese from Philadelphia or Baltimore aggregate $6.44 per ton, which compares with $2.28 from Philadelphia to Youngstown during 1910-1914, and $2.08 from Baltimore.

Market prices also yield some interesting comparisons. The current quotation of $5.55 per ton for non-Bessemer Mesabi ore compares with an average price of $3.32 between 1910 and 1914. Connellsville coke at $2.75 to $3.25 compares with $2.01. Ferromanganese at $57.60 compares with an average for the five-year period of $48.36, while spiegeleisen at $27, the current market, compares with an average of $23.86.

The differences in semi-finished and finished steel complete the comparison. Black sheets, for instance, now quoted at 3c., Valley, averaged from 1.86c. to 2.23c. per lb. between 1910 and 1914; plates at 1.75c. to 1.80c., this month, compare with 1.32c., the five-year average; basic pig iron at $19 to $20, compares with $13.88 during 1910-1914; open-hearth billets at $30 compare with $23.18. Sheet bars, now ranging from $30 to $32, compare with an average price between 1910 and 1914 of $23.17.

During the five years in which the averages were taken, the common labor rate changed from 16c. per hr., which prevailed prior to May 1, 1910, to 19½c., or an average of 18.39c., calculated by months. This compares with the going rate of 30c. in the Valleys.

Considering the differences in freight rates and wages between the period 1910-1914 and the present, prices of steel products are to-day as low proportionately, it is contended, as in 1910-1914.

Machinery Markets and News of the Works

BETTER TONE

Some Markets Report More Inquiries for Machine Tools

Actual Orders Have Not Shown Much Improvement, but Sentiment Appears to Be More Cheerful

Without much actual change in the machine-tool situation so far as orders are concerned, a better tone and more cheerfulness is reported from some market centers, notably Chicago, Cincinnati and Boston.

In Chicago, where the bulk of the trade is handled by dealers with showrooms, there has been a noticeable increase in the number of callers. Mail inquiries have also been in greater number.

Cincinnati reports that inquiries appear to be more genuine; in fact, seem to indicate that the business will be closed in the immediate future. One inquiry that is looked for at Cincinnati is for the General Motors Co. plant at Dayton, Ohio. The Big Four Railroad list is still pending, but it is expected that it will be closed shortly.

A fair degree of interest in machine tools is shown by the automobile industry. Purchases consist mainly of single tools, but there is some evidence that motor car manufacturers are planning for continued and steady production.

The F. C. West Corporation has practically completed purchases of factory equipment, including machine tools, for a Minneapolis plant, the outlay being about $250,000. Many used machines and some re-sale tools still in their original crates were purchased. The corporation has issued another inquiry calling for 19 tools and 10 trucks.

There is a little activity in New England. Action on two school lists are expected soon. A textile machinery manufacturer is inquiring for three or four tools. A Fitchburg, Mass., company is asking for prices on miscellaneous used tools.

New York

NEW YORK, Aug. 23.

If business in machine tools is no better it can at least be said that it is no worse. There continues to be a small demand for single tools from scattered sources, but large inquiries are unknown. The Board of Education of the city of New York is understood to have selected a part of its list of about 20 tools for vocational training. The local trade is simply waiting and hoping and there is no indication as to when an improvement in demand may be expected.

The crane market, as far as overhead traveling cranes are concerned, is about as dull as it has been at any time. In locomotive crane inquiries, however, there is evidently some slightly increased activity, numerous inquiries being in the market particularly from contractors and construction companies. The total sales of nine crane builders during July amounted to only about $70,000, representing about 3 per cent of the capacity of their plants. George P. Coulter, 1713 Sansom Street, Philadelphia, is inquiring for a 5-ton and 10-ton, 35-ft. span, overhead traveling crane. Frazar & Co., 30 Church Street, New York, and Okura & Co., 30 Church Street, New York, are handling an inquiry from Japan for a 70-ton, short span, overhead traveling crane. W. R. Grace & Co., New York, have been receiving bids on a 5-ton hand-power crane for export to South America. The Erie Railroad purchasing agent at 50 Church Street, New York, is accepting quotations on an 8-ton hand-power crane for the Forest City Colliery, Forest City, Pa. Hodgson-Freck, Ltd., Montreal, has inquired for a 15-ton, crawl-tread locomotive crane.

Among recent sales are: Shepard Electric Crane & Hoist Co., two 7½-ton, 38-ft. 3½-in. span overhead traveling cranes to Davies & Thomas Co., Catasauqua, Pa. (another 7½-ton crane will probably be purchased later); Chisholm-Moore Mfg. Co., a 5-ton, 18-ft. span hand-power crane to the San Francisco Mines of Mexico, Parral, Mexico. The Chesapeake Iron Works recently sold three 3-ton pillar cranes to the Third Avenue Railroad, New York, instead of one as reported.

The Electro Thermo Co., 206 Broadway, New York, recently incorporated to make electrically operated household appliances, such as washing machines, will shortly be interested in obtaining prices and catalogs, according to Leo H. Strauss of the company, relative to sheet metal working machines, bending machines, punch presses, etc.

The Willart Instrument Co., 13 Rose Street, New Rochelle, N. Y., has plans under way for the erection of a new two-story factory at the foot of Hugenot Street, 70 x 250 ft., estimated to cost about $60,000. Construction will commence at an early date. George Ferrischild, 220 North Avenue, is architect; William Nelson is president.

The Cylent Flush Meter Mfg. Co., Brooklyn, has been incorporated with a capital of $100,000 by J. Harris, C. Rice and B. Weissman, Brooklyn, to manufacture water meters, parts, etc. The company is represented by M. Eichner, 1545-47 Broadway, New York.

The American Bar Lock Co., Brooklyn, has been incorporated with a capital of $75,000 by D. E. and L. B. Mulford, and C. H. Law, Brooklyn, to manufacture skylights and other metal products. The company is represented by Caldwell & Polhemus, 50 Church Street, New York.

The Board of Directors, Utica State Hospital, Utica, N. Y., will take bids at an early date for a new cold storage plant, 70 x 100 ft., estimated to cost about $65,000.

The Fibre Tire & Rubber Co., New York, has been incorporated with a capital of $100,000 by E. F. Stoeckle, M. N. Salmon and E. F. File, New York, to manufacture tires and other rubber products. It is represented by C. Foley, 38 Park Row.

Topping Brothers, 122 Chambers Street, New York, heavy and marine hardware products, have awarded contract to the White Construction Co., 95 Madison Avenue, for a four-story and basement, reinforced-concrete building at Varick and Vandam streets, to total about 67,000 sq. ft. of floor space. Foundation work will provide for the addition of three more stories at a later date.

Fire, Aug. 17, destroyed a number of industrial plants on the block bounded by Greenpoint Avenue, Diamond, Calyer and Newell streets, Brooklyn, including the Greenpoint Motor Co.; Alexander Koby, forge and machine shop; Davis Wood Turning Co.; Manhattan Show Case Co.; Leiberine Stone Co.; and the Universal Reed & Willow Co., with total loss, including equipment, estimated at $1,000,000.

The Bangert Electric Co., Jamaica, L. I., has been incorporated with a capital of $40,000 by W. A. and A. M. Vangert, and T. Breiling, to manufacture electrical specialties. John Adikes, 285 Fulton Street, Jamaica, represents the company.

The Oil Burning Installation Co., New York, has been incorporated with a capital of $125,000 by B. Alexander, E. A. Pierce and A. W. Levy, 60 Wall Street, to manufacture oil burning equipment.

The A. L. Nichols Mfg. Co., Poughkeepsie, N. Y., has filed notice of change of name to the Algonquin Electric Mfg. Corporation.

The William A. Zeidler Co., Locust Avenue and 136th Street, New York, manufacturer of machinery and parts, has leased a building at 135th Street and Third Avenue for a branch plant.

The Corinth Electric Light & Power Co., Corinth, N. Y., has been granted permission to build a new electric power plant.

The Summit Brass & Bronze Works, Inc., Hoboken, N. J., has been incorporated with a capital of $100,000 by Fred

Hausmann, N. J. Shapiro and Henry P. Mertel, 700 Madison Street, to manufacture electric fixtures, and other brass and bronze products.

The Board of Fire Commissioners, East Orange, N. J., William H. Wilson, president, will take bids up to 8 p. m., Sept. 6, for 5 miles of underground fire alarm cable.

Reorganization plans are under way by the Eastern Foundry Co., Jamesburg, N. J., specializing in the production of piano plates. New interests will assume active control, and additional capital will be placed in the business for general expansion.

The National Metal Products Co., Passaic, N. J., has been incorporated with a capital of $50,000 by C. S. and Myron L. Wells, and Albert S. Bray, 12 Lexington Avenue, to manufacture metal goods.

The T. B. Lewis Co., Newark, N. J., has been incorporated with a capital of $100,000 by Theodore B. and F. E. Lewis, and J. J. Maloney, Newark, to manufacture locks and safety locking devices. It is represented by Frederick N. Esher, 586 Newark Avenue, Jersey City, N. J.

The Tousek Engineering Corporation, Newark, N. J., has been incorporated with a capital of $100,000 by Emil A. Kern, Paul Bernath and Edward B. Tousek, 228 Jelliff Avenue, to manufacture electrical devices and equipment.

E. E. Steiner & Co., 20 Orange Street, Newark, have leased the one-story building at 2-16 Avenue C, at Harper Street, 60 x 130 ft., for the establishment of a new plant to manufacture portable ovens and other metal products.

The Detonating Toy Mfg. Co., Newark, N. J., has been chartered under State laws to manufacture mechanical and other toys. The incorporators are Christian and Joseph Mayer, and Charles A. Scheihing. The company is represented by Russel H. Scheihing, 261 Walnut Street.

The Van Dorn Steel Products Co., 324 William Street, Long Island City, N. Y., has acquired two one-story buildings, at 310 Coit Street, Irvington, N. J., for a branch plant. It is proposed to construct several additional floors.

The First International Mfg. Corporation, Newark, N. J., has been chartered under State laws to manufacture cans, containers and other metal products. The incorporators are Harry A. Knauss and Frank A. Rizollo. The registered office is at 277 Livingston Street.

New England

BOSTON, Aug. 22.

Sentiment among a majority of local machine-tool houses appears more cheerful, due to several inquiries for one or more new and used machines. These are largely from small metal-working concerns enjoying increased business or planning to place on the market products not heretofore made in the hope of keeping plants in operation. A few of the better known companies are also inquiring. A large textile machinery maker is asking quotations on three or four tools, including a six spindle heavy duty radial drill. The Cambridge Plumbing Supply Co. and the Corcoran Supply Co., Cambridge, Mass., and similar companies elsewhere contemplate purchases of pipe threading and cutting machinery. One local dealer reports an inquiry from Montreal covering a considerable quantity of small equipment.

It is intimated that the Manchester, N. H., school lists will be acted upon in the near future. The Lynn, Mass., school list has been materially cut and other municipalities are not showing any more action on their lists than heretofore. Quite a slump is noted in garage inquiries for metal-working equipment.

The Leighton Machine Co., Manchester, has bought a 30-in. lathe. The Vaughn Foundry Corporation, Norwich, Conn., is considering the manufacture of pipe fittings and is inquiring for equipment.

William A. Hardy & Sons, Fitchburg, Mass., brass screen plates for paper mills, are asking quotations on miscellaneous used machine tools. A Philadelphia dealer the past week has purchased considerable used equipment from a local dealer. A number of companies purchasing Government tools the past year or more are adapting these for work other than the machines were originally intended and inquiring on used parts. Otherwise the market for used equipment is without special feature.

A reduction of 20 per cent on South Bend lathes is announced. Prices on the leading makes of files have been reduced 10 per cent. Two leading New England manufacturers of machinists' small tools have issued new discount sheets showing a reduction of 10 per cent, which leaves a net result of only 10 per cent as contrasted with the 1915 cost to the consumer. That is, prices to the consumer to-day are but 10 per cent higher than in 1915, allowing for the list price advances made by manufacturers in July, 1919.

Instead of one 50-ton and one 10-ton crane for the Green Island, N. Y., Ford plant, Stone & Webster, Boston, are inquiring for one 40-ton and one 10-ton crane.

The Machinery Clearing House Corporation, dealer in new and used machinery, 718 East Pratt Street, Baltimore, is in the market for the following lathes: One 24-in. to take 6 ft. 6 in. between centers; one 18-in. or 20-in. with 8-ft. or 10-ft. bed, Lodge & Shipley, LeBlond or American, motor driven; also one screw machine to take 2¼-in. stock.

Contract has been awarded by the Albert Russell & Sons Co., Newburyport, Mass., for rebuilding its foundry destroyed by fire several weeks ago.

The Heppenstahl Forge Co., Harvard Avenue, Bridgeport, Conn., has been granted permits to erect oil tanks and a one-story pumping station.

Bids are asked by C. W. Parks, chief of the Bureau of Yards and Docks, Washington, for mechanical equipment and piping for and alterations to a Government owned boiler plant at Boston.

The Rowe Calk & Chain Co., Plantsville, Conn., is perfecting plans for the manufacture of an automatic device for carrying spare tires on automobiles, a patent on which recently was granted.

Lockwood, Green & Co., Boston, are preparing plans for an addition to the factory of the H. L. Judd Co., Cherry Street, Wallingford, Conn., brass andirons, etc., to cost about $100,000.

The F. T. Ley Co., Springfield, Mass., has been awarded a contract for the construction of a power house, dam and penstock for the South Berkshire Power & Electric Co., Williamsville, Mass.

William S. Thompson is president, Benjamin W. Woodward, vice-president, and Charles M. Cornins, treasurer, of the Woodward Wrench Co., Springfield, Mass., recently incorporated under Massachusetts laws. It is capitalized for $500,000.

Robert W. Merrick, 32 Greenleaf Street, Quincy, is president and Charles B. Putnam, 32 Queensbery Street, Boston, treasurer of the Electric Highway Signal Co., Boston, which has taken out a charter to manufacture highway safeguarding and regulating devices.

George M. Wright, formerly president and general manager Wright Wire Co., Worcester, and his son, George F. Wright, until recently vice-president Wickwire-Spencer Steel Corporation, which took over the Wright Wire Co., this fall plan to engage in the manufacture of wire drawing machinery and equipment in Worcester. Offices have been secured in the Park Building, that city.

The Hunt-Lasher Co., Inc., has been granted a charter to manufacture blow pipe alcohol torches, automobile accessories, household and electrical appliances, machinery and tools. Lester L. Lasher, 53 Lawton Avenue, Lynn, is president, and Joseph M. Hunt, 319 Temple Street, West Roxbury, Boston, treasurer.

J. E. Conant & Co., Lowell, Mass., will sell at auction Sept. 1 the equipment and stock of the No. 1 plant of Burgess Co. & Curtis, Marblehead, Mass., aeroplanes.

New interests, headed by Garrett M. Ross, have acquired the plant and business of the Cushman Electric Co., Concord, N. H., manufacturer of motors, motor-generator sets, etc. The present name will be retained and the plant continued in operation for the same products. Mr. Ross is president of the new company; A. L. Cushman, vice-president, and Alexander P. Achimore, manager.

The Wallace Barnes Co., Wallace Street, Bristol, Conn., manufacturer of steel springs, etc., is arranging for the early opening of a branch plant at Hamilton, Ont., to be operated under the name of the Wallace Barnes Co., Ltd., recently organized as a subsidiary, with capital of $300,000.

The Forestdale Mfg. Co., Forestdale, R. I., has completed plans for the construction of a new power house at its cotton mills.

The F. A. Whitney Carriage Co., Leominster, Mass., has filed plans for a three-story addition, 45 x 70 ft.

The L. & H. Motors Co., Hartford, Conn., manufacturer of automobile equipment, has awarded contract to the Lawrence & Coe Construction Co., 372 Trumbull Street, for an addition to its plant on High Street.

The National Folding Box & Paper Co., New Haven, Conn., is taking bids for an addition to its plant on James Street, 62 x 140 ft., estimated to cost about $150,000, including machinery. Westcott & Mapes, Inc., 207 Orange Street, are architects and engineers.

Chicago

CHICAGO, Aug. 22.

There has been a noticeable increase in the number of callers at local machine tool houses and inquiries coming through the mail are also more numerous. Prospective buyers who visited the local market the past week were from such distant points as Nebraska and Ohio. Dealers are encouraged by the increased interest, and while buying is still relatively light, it is felt that business has turned the corner and is now on the upswing.

The F. C. West Corporation, referred to last week, has practically completed purchases of equipment for a new Minneapolis plant. The total outlay for all equipment, including machine tools, will amount to about $250,000. Thus far most of the machines have been bought second-hand and in many cases practically new tools which have never been put to use have been acquired at favorable prices. Many of the machines were bought in the East and several carloads have been shipped to Minneapolis. The new plant, the name of which has not been disclosed, is in the new industrial section of Minneapolis and has 44,000 sq. ft. of floor space. It will manufacture automotive replacement parts. Edward M. Heller & Co., 944 West Kinzie Street, Chicago; now in direct charge of machine tool purchases, have issued the following inquiry for equipment not yet bought:

One 60-in. wheel lathe for trimming treads on locomotive drivers and car wheels.
One 20-in. x 14 or 16-ft. motor driven engine lathe.
One lathe to cut threads on bolts up to 2 in. in diameter with universal head.
One Baker elevating type electric factory tractor.
Two piston boring machines.
Two 10 x 50-in. plain Norton grinding machines.
One 75-ton back-geared punch press.
Ten to 15 3½ x 60-in. Fitchburg Lo Swing lathes.
Ten Steubing hand-operated elevating trucks.

The Huenengarth Co., Lincoln, Neb., recently organized to manufacture washing machines, has been sounding the local market for a hand screw machine, turret lathe, disk grinder and a hack saw. The Arctic Corporation, Michigan City, Ind., recently incorporated, has gone into the manufacture of ice machines, and has closed for some metal-working equipment. The formal letting of the Illinois Central machine tool orders was made last week.

As previously intimated, there has been an encouraging movement of second-hand equipment of late. One dealer reports a single transaction involving two gear generators and two upright drills. Many users particularly the smaller buyers, evince an interest in second-hand offerings and if they do not find what they want in new equipment frequently purchase used tools.

Two manufacturers of milling machines in addition to those mentioned a week ago have reduced prices. One, a Western maker, has cut quotations 10 to 15 per cent, and another, an Eastern builder, has marked off 15 per cent. A Western manufacturer of hand screw machines has made a reduction of 10 per cent. South Bend engine lathes have been marked down 20 per cent. In connection with this reduction it is announced that the prices of Jan. 1, 1914, were only 37 per cent lower than present quotations. This comparison does not take into consideration the fact that the present machines are not the same as those sold in 1914. In fact, practically all machine tool builders have redesigned their equipment since that time with the result that their machines are more rugged and have a greater output. One large manufacturer of radial drills spent $250,000 on redesigning. The column was increased in diameter, the saddle was lengthened, tapping frictions were increased 40 per cent and now run in oil instead of in the open, the gears are now of chrome nickel steel whereas they were formerly of cast iron, the weight of the machine was increased 33⅓ per cent, and the range of feeds and speeds was expanded.

E. J. Gaddis, 1548 East Sixty-seventh Street, Chicago, has let contract for a one-story battery repair station, 50 x 127 ft., 1540-42 East Sixty-seventh Street, to cost $20,000.

The Hannifin Mfg. Co., 621 South Kolmar Avenue, Chicago, has postponed until next spring the construction of a two-story factory, 90 x 150 ft., at the northeast corner of Knox and Wellington avenues. The structure will cost $200,000.

The Wickey Battery Co., East Chicago, Ind., has been incorporated with $75,000 capital stock to manufacture electric batteries. The directors include E. W. and W. G. Wickey, J. E. Francis, D. L. White and H. E. Zoeger.

The Saperston Mfg. Co., 28 North Clinton Street, Chicago, has been incorporated with $8,000 capital stock to manufacture arch supports and foot appliances. The incorporators include Perry Saperston, Charles D. Saperston, and Frederick L. Wallace.

H. A. Zimmer, formerly of Moline, Ill., will open a general machine shop at 127 South Prairie Street, Galesburg, Ill. It will be equipped to do die, gear and grinding work.

The Malleable Iron Co., Kokomo, Ind., which recently completed a new foundry, will commence operations within a few weeks. It will supply material for the Haynes Automobile Co., Kokomo, and the Service Motor Co., Wabash, being a subsidiary of these two companies. G. A. Wagner will be general manager.

Washington, Ind., has sold $100,000 worth of stock in the Union Steel Mfg. Co. as an inducement to that company to move its factories and offices to that city. The company controls two plants, one at Brazil, Ind., and the other at Chicago. The Chicago plant is largely given over to the manufacture of die castings.

The construction of a new plant for the Otsego Angle Steel Co., Plainwell, Mich., will start soon, according to an announcement by one of the officers.

S. Buchsbaum & Co., 159 North State Street, Chicago, jewelers, plan to build a six-story office and factory building, 100 x 175 ft., East Huron and Fairbanks streets, to cost $300,000.

The Grand Avenue Building Co., E. H. Gill, engineer, Interstate Building, Kansas City, Mo., has let a contract for a two-story garage, 80 x 122 ft., at 714 Grand Avenue, to cost $100,000.

The board of directors, St. Lucas Hospital, Faribault, Minn., is arranging plans for the erection of a new one and two-story power house at the institution.

The Mattson Wire Mfg. Co., Market and Lucas streets, Joliet, Ill., has been chartered under State laws to manufacture wire goods, and other metal products. The incorporators are J. A. Tune, C. N. and Elmer L. Crouch.

Chalmers-Williams, Inc., 208 South La Salle Street, Chicago, manufacturer of mining machinery, has awarded contract to the Arnold Co., 207 South La Salle Street, for a one-story addition to its plant in the Chicago Heights section, estimated to cost about $50,000.

Philadelphia

PHILADELPHIA, Aug. 22.

The Electric Storage Battery Co., Nineteenth and Allegheny streets, Philadelphia, has acquired a building at New Orleans for a new branch works.

The Metropolitan Body Co., Philadelphia, is being organized to manufacture motor-truck and automobile bodies. Application for a State charter will be made on Sept. 12. It is represented by Nathaniel I. S. Goldman, 812 Lincoln Building.

The Department of City Transit, Philadelphia, is considering the erection of two new power plants for the municipal electric railroad system to cost in excess of $500,000.

Fire, Aug. 15, destroyed a portion of the plant of the Atlantic Refining Co., Philadelphia, with main offices at 3144 Passyunk Avenue, with loss estimated at close to $1,000,000. The equipment destroyed included four pumping plants with machinery, five steam stills, oil tanks, agitator tanks, separator equipment and other apparatus.

The Tioga Engineering & Pattern Co., Philadelphia, Pa., has been incorporated with a capital of $65,000 to manufacture machine parts, castings, patterns, etc. William S. Cox, Fifth Street and City Line, is treasurer.

Charles Wacker, Philadelphia, operating a wagon and wagon parts plant at 1345 West Cumberland Street, has filed plans for a new factory at 1304-1308 West Cumberland Street.

The Multilite Mfg. Co., Philadelphia, is being organized to manufacture lighting fixtures and other metal products. Application for a State charter will be made on Sept. 6. The company is represented by Rose & Fischer, 803-6 Victory Building, 1011 Chestnut Street.

D. P. Brown & Co., 264 North Fourth Street, Philadelphia, manufacturers of belting, etc., have acquired the two four-story factory buildings at 405-7 Wood Street, to be used in connection with general operations.

The King-O-Tone Phonograph Co., Philadelphia, has been incorporated under Delaware laws with capital of $500,000 to manufacture talking machines and parts. It is represented by F. R. Hansell, Land Title Building.

The Mercer Motors Corporation, Trenton, N. J., is arranging for the sale of a bond issue of $500,000, following which notes amounting to $2,000,000 will be issued, the proceeds to provide working capital for resumption of production and expansion. The company is being reorganized to operate independently of Hares Motors, Inc., heretofore holding supervision.

The Franklin Air Compressor Works, Inc., Norristown, Pa., has been incorporated with a capital of $50,000 to manufacture air compressors and other machinery. George C. Yates, 27 West Pomona Street, Philadelphia, is treasurer.

The Wilson Motor Co., 1721 Haddon Avenue, Camden, N. J., has completed plans for the erection of a new one-story plant on Haddon Avenue, to cost about $45,000. Construction will commence at once.

The Anthracite Refractories Co., Blakely, Pa., has been incorporated with a capital of $150,000 to manufacture fire brick and other refractory products. D. J. Beardslee, Peckville, Pa., is treasurer.

The Deca-Disc Co., Hanover, Pa., has been incorporated under Delaware laws with capital of $500,000 to manufacture a newly patented talking machine. Paul D. Bodwell is president, and George L. Creager, secretary.

Buffalo

BUFFALO, Aug. 22.

The L. G. Schoepflin Co., 80 West Mohawk Street, Buffalo, has plans under way for a two-story automobile service and repair works, 60 x 175 ft., at 306 Franklin Street, to cost about $55,000.

The Lightning Change Auto Wheel Corporation, Rochester, N. Y., has ben incorporated with a capital of $250,000 by J. M. Sebring, B. R. Robin and F. Hesse, Rochester, to manufacture metal automobile wheels. It is represented by H. H. Cohen, Trust Building.

The Genesee Light & Power Co., Batavia, N. Y., is planning for extensions and improvements in its local electric plant and system.

The E. Bartheimes Mfg. Co., Rochester, has been incorporated with a capital of $300,000 by E. Bartheimes, A. C. Wischmeyer and W. Haefele, Rochester, to manufacture stamped metal products. It is represented by McLean, Duffy & Kaelber, Insurance Building.

Th W. J. Hall Co., 54 South Fitzhugh Street, Rochester, is taking bids for a two-story machine shop and automobile service building on Lake Street, 61 x 70 ft. Leander & McCord, Powers Building, are architects.

The Wickwire Limestone Co., River Road, Buffalo, is planning to rebuild the power plant at its properties at Lockport, N. Y., recently destroyed by fire with loss estimated at about $30,000.

Frostholm Brothers, manufacturers of special machinery and tools, Syracuse, N. Y., have opened a tool and cylinder regrinding shop in Rochester under the name of Frostholm-Treiber, Inc. The incorporators are C. C. and J. H. Frostholm. Melvin & Melvin, First Trust and Deposit Building, Syracuse, represent the company. The name was incorrectly given last week as the Crostholz-Trieber Co.

Baltimore

BALTIMORE, Aug. 22

The Board of City Commissioners, Oxford, Md., has made application for permission to construct a local electric power plant for municipal service. Bonds for the project will be issued at an early date.

The Maryland Motor Machine Co., Frederick, Md., recently reorganized with Charles H. Kehne as president, is planning for the erection of an addition to its factory.

The Smoot Specialties Corporation, 614 West North Avenue, Baltimore, has been incorporated with a capital of $50,000 by William B. Smoot, John G. Chapman and Gerard W. C. Smoot, to manufacture automobile equipment.

The Freedom District Electric Light Co., Sykesville, Carroll County, Md., has been chartered under State laws to equip and operate an electric light and power plant and system. The incorporators are John T. Scott, Charles C. Williams and Charles W. Melville, Sykesville.

Fire, Aug. 13, destroyed a portion of the plant of the American Manganese Steel Co., New Castle, Del., including a four-story pattern shop, with loss estimated at about $100,000.

The Aircraft Construction & Transportation Corporation, Wilmington, Del., has been incorporated under State laws with capital of $100,000,000 to manufacture airplanes and parts. It is represented by the Delaware Charter Co., 904 Market Street.

William Shinn & Co., Inc., 407 Orange Street, Wilmington, Del., has been incorporated with a capital of $100,000 by William I. and John A. Shinn and M. N. Parry to manufacture cornices, skylights, metal window frames and other sheet metal products.

The Ringless Piston Replacement Co., Wilmington, Del., has been incorporated under State laws with capital of $3,000,000 to manufacture pistons, piston rings and kindred products for automobile engine service. The company is represented by the Corporation Trust Co. of America, duPont Building.

The Neill-Buick Co., Inc., 111 West Mount Royal Avenue, Baltimore, has been incorporated with a capital of $100,000 by Daniel S. Neill, John Kimmell and Benjamin B. Nyce, to manufacture automobile trucks, tractors and parts.

The Paragon Motor Car Co., Cumberland, Md., manufacturer of automobiles, will break ground at once for the first unit of its new plant on Mount Savage Road. It will be 165 x 480 ft., and will be supplemented by a number of smaller buildings. A power plant will also be erected.

Fire, Aug. 9, destroyed a portion of the plant of the Armour Fertilizer Co., Bull Creek, Columbus, Ga., with loss estimated at about $300,000. Headquarters of the company are at 209 West Jackson Boulevard, Chicago.

The Columbia Railway & Navigation Co., Columbia, S. C., is planning for the construction of a new hydroelectric generating plant on a canal to be constructed, connecting the Santee and Cooper rivers, with initial capacity of about 30,000-hp. The work, including canal construction, is estimated to cost close to $5,000,000. G. A. Guignard is president.

The Lullwater Co., Atlanta, Ga., recently organized with a capital of $2,000,000, has acquired a six-story and basement building, totaling about 110,000 sq. ft., for the establishment of a plant to manufacture automobile equipment and accessories. The different departments will include parts manufacture, nickel plating works, machine and repair department, grinding room, welding department, etc. A portion of the works will also be given over to battery repair operations. Lionel J. Kahn is manager.

The Caldwell Power Co., Lenoir, N. C., recently organized with a capital of $300,000, has preliminary plans under way for a hydroelectric generating plant. J. H. Beall and J. L. Nelson head the company.

The Southern Electro Steel Co., Scott Building, Lynchburg, Va., has increased its capital stock to $100,000 and will install additional machinery. Joseph Keyser is president.

Detroit

DETROIT, Aug. 22.

The Hercules Steel Post Co., Niles, Mich., care of G. J. Pammel, secretary local Chamber of Commerce, representative, has plans nearing completion for a new one-story factory, 50 x 250 ft., estimated to cost about $30,000.

The Perry Mfg. Co., Inc., Argentine, Genesee County, Ind., has been incorporated with a capital of $100,000 by D. F. Hopkins, W. L. Coop and George E. Taylor, Argentine, to manufacture barn and dairy equipment, farming implements and kindred products.

Ralph J. Handy, Inc., Detroit, has been incorporated with a capital of $100,000 by Mark A. Bertaire, Karl O. Hawley and Ralph J. Handy, 2074 Seward Avenue, to manufacture motor trucks and parts.

The City Council, Lansing, Mich., has plans under way for a new municipal electric power plant estimated to cost about $1,600,000. Woodwell & Resler, 501 Fifth Avenue, Lansing, are architects and engineers.

The Algonac Boat & Machine Co., Algonac, Mich., has acquired property adjoining its plant for extensions. It recently completed an addition, and greater capacity is again required. Jan Smits is president.

The Greater Hart Association, Hart, Mich., a community betterment organization, is arranging for a site for a new plant for the Hart Quick Change Rim Co., recently organized to manufacture a collapsible metal rim for automobile wheels and attachments. It is said that the initial plan will cost about $50,000. The company is headed by George W. Powers and L. P. Hyde, Hart.

The plant of the H. M. Reynolds Asphalt Shingle Co., Grand Rapids, Mich., was recently destroyed by fire with a loss of $250,000 to $400,000. Plans are under way for new works of steel and concrete.

The True Mfg. Co., Eaton Rapids, Mich., which will manufacture several lines of automotive accessories, expects to begin construction of a new plant within 30 days.

The LaBelle Washing Machine Co., Ecorse, Mich., has been organized by Alfred Robinson, Ecorse; William H. Rouston, Detroit, and Hugh McLain, Oakwood, Mich. The product will be handled at the Robinson plant in Ecorse and the business headquarters will be in Detroit.

The Columbia Body Corporation, Detroit, has acquired the plant of the American Chemical Co. in Ford, Mich., and is removing to that town.

Pittsburgh

PITTSBURGH, Aug. 22.

As far as actual business is concerned, the local machinery market is exceedingly quiet. Representatives of crane manufacturers have had a fair number of requests for prices for estimating purposes, some of which may later develop into definite inquiries, but the only order placed in the past week was for a 10-ton, 40-ft. span, 3-motor overhead, by the Ladel Mfg. Co., New Philadelphia, Ohio, which is building a new foundry, the order going to the Northern Engineering Works, Detroit. Inquiry put out by the Wheeling Steel Corporation several weeks ago for a 5-ton, 7½-ton, and a revolving jib crane is dormant. Machine-tool activities are confined largely to individual pieces which are absolutely required to replace old or worn-out equipment. One dealer reports the sale of a heavy duty Diamond grinder with 40-hp. motor and attachments. Such tools ordinarily form part of the equipment of railroad shops, but this grinder is said to have been taken by a company engaged on different work. There is an absence of railroad inquiry and the manual training school lists, issued by the cities of Johnstown and Butler, Pa., and Wheeling, W. Va., do not appear to be near the closing stage. The school board of Johnstown, Pa., has decided upon a new high school and this is expected to delay the placing of tools for the manual training department until the completion of the building. Considerable difficulty is being experienced in securing appropriations for school purposes in these cities. The Westcott Chuck Co. has increased the discount to jobbers from 16⅔ per cent to 25 per cent, and has not reduced prices 16⅔ to 25 per cent as was stated in THE IRON AGE of last week.

The Oberndorf Mfg. Co., 7509 Thomas Boulevard, Pittsburgh, manufacturer of pipe, steamfitters' supplies, etc., will take new bids on revised plans at an early date for its one-story addition, 160 x 200 ft., estimated to cost about $150,000. Edward Oberndorf is president.

The Standard Specialty Co., Pittsburgh, is being organized by E. W. Gibson, F. G. Leslie and F. J. Semasko, Pittsburgh, to manufacture metal products. Application for a State charter will be made Sept. 6. It is represented by Owen S. Cecil, 1016 Berger Building.

The Westinghouse Electric & Mfg. Co., East Pittsburgh, is reported to be planning for a new foundry at Trafford, Pa., to give employment to more than 300 men.

The Ingram-Richardson Mfg. Co., Beaver Falls, Pa., manufacturer of enameled iron signs, and other metal products, has completed plans for a one-story addition, 95 x 130 ft., estimated to cost about $60,000, including equipment.

The Kentucky & West Virginia Power Co., 30 Church Street, New York, has plans under way for extensions and improvements in its hydroelectric generating plant on Little Island, near Logan, W. Va., to cost in excess of $500,000. The work will include the installation of two new 15,000 turbo-generators with auxiliary machinery. Francis R. Weller, Hibbs Building, Washington, is consulting engineer.

The Puritan Coal Co., Williamson, W. Va., will build a new steel tipple at its properties, with daily capacity of about 4000 tons, estimated to cost $60,000.

The Rosedale Coal Co., Monongalia County, W. Va., with offices at Morgantown, W. Va., will build a new steel tipple at its properties, estimated to cost about $50,000.

The Central South

ST. LOUIS, Aug. 22.

The St. Louis Pump & Equipment Co. has leased the two-story brick building at the corner of Forest Park Boulevard and Spring Avenue, and will make alterations and improvements. John C. Roberts, Jr., is president.

The Standard Stamping Co., 2000 North Broadway, St. Louis, manufacturer of stamped metal products, has taken bids for a one-story plant, 107 x 132 ft., for the manufacture of enameled metal ware products. It is estimated to cost about $50,000. Klipstein & Rathman, Chemical Building, are architects.

The Nichols Wire & Sheet Metal Co., Tenth and Missouri streets, Joplin, Mo., is having plans prepared for a one-story building, 50 x 200 ft., at 513 East Fifth Street.

Fire, Aug. 7, destroyed a portion of the works of the Rhinock-Flexner Co., Hancock Street, Louisville, steel and metal specialties, with loss estimated at about $32,000.

The Beggs Machinery & Supply Co., Beggs, Okla., has been incorporated with a capital of $25,000 by William H. Donohue and H. T. Purnell, Beggs; and E. J. Little, Tulsa, Okla., to manufacture machine products, etc.

The Huckabee Tractor & Mfg. Co., 704 South Valmar Street, Little Rock, Ark., is planning for the installation of new machinery at its works. N. F. Wilson is general manager.

The Board of Directors, University of Missouri, Columbia, Mo., is completing plans and will soon call for bids for a new one-story and basement power plant estimated to cost about $150,000. Prof. Guy D. Newton is engineer.

The Chattanooga Warehouse & Cold Storage Co., 212 King Street, Chattanooga, Tenn., has plans under way for the erection of a two and four-story addition to its cold storage plant. Bouchard & Co., Nashville, Tenn., are engineers.

The Little Rock Auto Tow Service Co., 115 West Twentieth Street, Little Rock, Ark., recently organized, has plans under way for a two-story automobile service works, with machine and repair departments, 50 x 100 ft. William Rinke is president and general manager.

The Mercury Motor Corporation, Quapaw, Okla., has been incorporated with a capital of $250,000 by W. I. Bingham, Quapaw, and W. E. Douthat, Commerce, Okla., to manufacture automobiles and parts.

The Ohio-Kentucky Fluorspar & Lead Co., City National Bank Building, Paducah, Ky., recently organized with a capital of $1,000,000, is planning for the construction of new works in the vicinity of Smithfield, Ky., with daily output of 100 tons. It will include crushing plant, refinery, etc., and is estimated to cost in excess of $200,000. The company has acquired the property of the North American Fluorspar & Lead Corporation in this section. T. J. Clay is president, and F. B. Moodie, vice-president and manager.

Indiana

INDIANAPOLIS, Aug. 22.

The Indiana Electric Corporation, Indianapolis, Ind., recently organized, has plans under way for a merger of a number of light and power companies, following which a large hydroelectric generating plant will be constructed on the Wabash River, near Terre Haute, Ind. The plant will have a capacity of 30,000-kw., and with transmission system is estimated to cost more than $2,000,000. The company is planning for a bond issue of about $5,000,000 to carry out the project. It is headed by Joseph H. Brewer, president American Public Utilities, Inc., Grand Rapids, Mich.; Charles O'Brien Murphy and Paul D. Birdsall, both of the Merchants' Heat & Light Co., Indianapolis.

The Berry Oil Gas Burner Co., Schnellville, Ind., has been chartered under State laws to manufacture oil and gas burners. The incorporators are J. A. Berry, F. A. Haas and J. W. Haas, all of Schnellville.

The Public Service Commission, Indianapolis, will receive bids at the office of the secretary up to 1 p. m., Aug. 29, for a quantity of galvanized posts to be used for carrying metal disk warning signs at railroad crossings. The disks will be manufactured at the State prison.

The Haynes Tractor Co., Kokomo, Ind., affiliated with the Haynes Automobile Co., has tentative plans in preparation for a new one and two-story plant to manufacture automobile tractors. Elwood Haynes is head of the company.

The City Council, Kendallville, Ind., has completed arrangements for the erection of a one-story addition to the municipal electric power plant, 50 x 100 ft.

Cincinnati

CINCINNATI, Aug. 22.

The Ford Motor Co. was a purchaser of machines the past 10 days, taking a number of tools. Manufacturers and dealers report a better tone to inquiries and expect that in the near future some buying will develop. An inquiry for a number of machines is looked for shortly from the General Motors Co. for plants in Dayton, Ohio. The Big Four list is still pending, but is likely to be closed at any time. An Eastern list involving a number of lathes will probably close this week. The automotive industry is showing some activity and local manufacturers received several orders from this source.

The Criterion Automotive Products Co., Dayton, Ohio, has been incorporated with a capitalization of $75,000 to manufacture automobile accessories. Frank Moeschel, H. A. Rietdy and Carl Brough are incorporators.

It is understood that the Burton-Townsend Co., Zanesville, Ohio, is contemplating the erection of a brick plant at Darlington, Ohio. Plans have not yet been completed.

The Cincinnati Sash & Door Co., whose plant at Sixth Street and Freeman Avenue was recently damaged by fire, has secured a new location in the adjoining neighborhood. The damage to the equipment amounted to approximately $30,000. New machinery has been installed and the plant is again in operation.

The Gulf States

BIRMINGHAM, Aug. 22.

The Texas-Mexia Co., Mexia, Tex., is completing plans for a new oil refinery to cost about $400,000, including machinery. The company recently acquired about 40 acres of land.

Edward Boehm and F. T. Fehrenkamp, Moulton, Tex., are organizing a company to construct a new electric power plant. An ice-manufacturing plant will also be erected.

The Jahnacke Ship Repair Co., New Orleans, is negotiating for the purchase of the river front property occupied by the Jackson Barracks, for proposed extensions in its plant.

The Efficiency Engineering Co., Orlando, Fla., has been incorporated with a capital of $30,000 to manufacture special driving mechanisms and other mechanical equipment. M. O. Overstreet is president and treasurer; P. L. Billingsley is secretary.

The Golden State Refining Co., Mexia, Tex., is planning for the erection of a new refinery with initial daily output of 6000 bbl. It recently acquired a site for the plant.

The Bastrop Pulp & Paper Co., Bastrop, La., is planning for installation of machinery at its new plant, to be ready for operation in October and estimated to cost close to $1,000,000. It is a subsidiary of the Kansas City Packing Box Co. and the Kansas City Fibre Box Co., both of Kansas City, Mo. L. H. Fox is head of the companies.

The Freeport Gas Co., Freeport, Tex., has completed plans for the construction of a new plant to manufacture steel drums. It is proposed to develop a daily capacity of about 500. C. A. Jones is manager.

J. Schlecht, Bradentown, Fla., is organizing a company to establish a plant for the manufacture of spark plugs and kindred products.

O. H. Foster, Breckenridge, Tex., and associates, have acquired property at Mexia, Tex., for the erection of a new oil refinery, estimated to cost about $350,000.

The Merritt Island Light & Power Co., Merritt, Fla., has plans under way for a new electric light and power plant. O. R. Grosse is president.

The Chapman Carriage Factory, Jacksonville, Fla., will build a plant at a cost of about $200,000 for the manufacture of carriages, automobile tops and parts. W. E. Sweney is president.

Milwaukee

MILWAUKEE, Aug. 22.

In the past week more indications of the beginning of an actual recovery from the depresion in the metal-working industries have come to the surface. While the machine tool market has not yet felt an appreciable effect, the nature and scope of inquiry portends improvement and new business is developing with greater frequency. Individual orders though small and limited principally to single tools, are becoming more numerous, and it is believed that some good business may be expected in the coming three months. A general view of the local metal-working industry shows that manufacturers are more disposed to make capital investments and some projects intermitted three and six months ago are being resumed.

The F. Rosenberg Elevator Co., 174 Reed Street, Milwaukee, manufacturer of freight and electric passenger elevators, is taking bids for a new plant at Franklin and Becker streets and the Chicago, Milwaukee & St. Paul tracks. It will be of brick and steel, 120 x 223 ft., and cost about $100,000 complete. Considerable new equipment, including a 5-ton electric traveling crane, will be installed. Bids are being taken on the equipment. The architects are Martin Tullgren & Sons, 425 East Water Street, Milwaukee.

The Wrought Washer Mfg. Co., Milwaukee, manufacturer of wrought iron washers and similar bolt, nut and screw specialties, is starting work on the construction of two additions to its plant at Wilcox and South Bay streets. One will be 179 x 135 ft., for manufacturing, storage, warehouse and shipping, and the other, 15 x 89 ft., for offices, stock storage, etc. The cost of the improvements is estimated at $50,000. The general contractors are Klug & Smith, Mack Block, local.

The Marsh Refrigerator Service Co., Milwaukee, manufacturer and repairer of refrigerator cars, is liquidating its business and has sold its plant on the Port Washington Road and the Milwaukee Road tracks to the Matthews Brothers' Mfg. Co., 61-75 Fourth Street, manufacturer of fine interior woodwork, office fixtures, aircraft propellers, etc. The Matthews company in turn has disposed of its present plant to the Rundle-Spence Mfg. Co., 63-67 Second Street, manufacturer of plumbers, and steamfitters' supplies, etc. Both plants will undergo considerable alteration, improvement and retooling by the new owners. The Matthews company will take possession of the Marsh plant about Sept. 1, and give occupancy of its plant to the Rundle-Spence company on Nov. 1. The latter company will operate its newly acquired plant as a branch of the works on Second Street, which will be kept intact. The two transactions involve in excess of $500,000.

The Peter Pirsch & Sons Co., Kenosha, Wis., has engaged Charles O. Augustine, local architect and engineer, to design a one-story brick and steel addition, 100 ft. sq., for the production of fire apparatus for mounting on horse-drawn and motor chassis, and complete vehicles. The investment in building and equipment now being purchased is estimated at $50,000.

The Maribel Straw Cutter Co., Maribel, Manitowoc County, Wis., has been organized with $50,000 capital to manufacture a patented straw cutter and a self-feeding device attachable to all feed cutting machines. Work is under way on a factory, 40 x 100 ft., and equipment is now being purchased. Operations will begin about Oct. 1. Officers of the company are: President and general manager, Henry Elmer; vice-president, Patrick Carberry; secretary, Martin Kvitek; treasurer, Dr. V. V. Kellner.

The Valley Paper Mills, Inc., Neenah, Wis., recently organized with $800,000 capital stock, has acquired a water power site of 17 acres at Blair Springs on the Fox River and is having plans prepared for a paper and pulp mill and auxiliary buildings, to cost with equipment about $600,000. The architect is Edward A. Wettengel, Appleton, Wis., and the engineer for equipment, etc., is Albert C. Ehlman, 835 Caswell Block, Milwaukee. The main building will be 80 x 550 ft., part two stories; the boiler house and engine room, 60 x 165 ft.; machine room, 80 x 170 ft.; beater room, 80 x 100 ft., and finishing room, 80 x 150 ft., all of brick and steel on concrete substructures. G. W. Burnside, Neenah, is general manager.

The Allis-Chalmers Mfg. Co., Milwaukee, has taken the contract for furnishing and installing four electric generating units with a combined capacity of 8000 kw. in the new tractor plant to be established at Troy, N. Y., by the Ford Motor Co. The contract amounts to approximately $200,000. It also recently completed the equipment of a $500,000 saw and planing mill and general wood-working plant at Iron Mountain, Mich., for the Ford interests, which operate this division as the Michigan Lumber, Land & Iron Co.

The Elto Outboard Motor Co., Milwaukee, is the name adopted by Ole Evinrude for a new corporation which he is organizing to take over his business, established about a year ago at 62 Mason Street, of manufacturing gas engines for application to rowboats, canoes and other light water craft. The company is now in quantity production and early next spring intends to build a new plant, although details have not yet been worked out. Mr. Evinrude was the founder of the Evinrude Motor Co., Milwaukee. He retired in 1913 and since then has developed a new light twin-cylinder engine producing 3-hp. and weighing complete 46 lb. Officers of the new company are: President and general manager, Ole Evinrude; vice-president and advertising manager, Mrs. B. Evinrude; secretary-treasurer and sales manager, George B. Treviranus.

The Wisconsin State Board of Control, Capitol Building, Madison, has let the general contract to the American Contracting Co., 198 Milwaukee Street, Milwaukee, at $34,800 for the construction of a power house at the State Home for Feeble-Minded in Union Grove, Racine County.

The Milwaukee-Western Fuel Co., 120 Wisconsin Street, closed bids Aug. 22 for a reinforced concrete, brick and steel garage, machine shop and mechanical service building, 136 x 138 ft., part two stories and basement, at Clinton and South Pierce streets. The equipment will include two 5-ton electric traveling cranes, which probably will be purchased locally. The architects and engineers are Klug & Smith, 30 Mack Block, Milwaukee. William F. Ardern is vice-president and general superintendent.

The Clark Cylinder Regrinding Co., Racine, Wis., has filed articles of incorporation with a capital stock of $25,000 to build a machine shop specializing in automotive engine repairs. The principals are John Clark, Joseph Keidel and Leonard P. Baumblatt, all of Racine.

The Board of Education, Prairie du Sac, Wis., has engaged J. R. & E. J. Law, architects, Madison, Wis., to design a new high school with vocational training departments, to cost about $100,000.

The Northern Wisconsin Hydro-Electric Power Co., Port Wing, Wis., has been organized by T. N. Okerstrom, Port Wing, to develop a waterpower site with a potentiality of 3385-hp. at Orienta Falls on the Iron River. The initial work, which will be undertaken early next spring, will involve an investment of about $375,000.

The Clarkson Coal & Dock Co., Ashland, Wis., which is investing about $500,000 in a new coal dock, handling equipment, etc., has reincorporated under the laws of Delaware with an authorized capital stock of $3,700,000. The incorporators are M. P. Clarkson, J. A. Vaughn, H. R. Johnson and H. P. Porter.

The Continental Axle Co., Edgerton, Wis., advises that it did not sustain a fire loss on July 4. Its building and equipment are intact and the company is under production.

California

LOS ANGELES, Aug. 22.

Buttress & McLean, 205 North Los Angeles Street, Los Angeles, has filed plans for three one- and two-story buildings at Fifty-first Street and Santa Fe Avenue, for the manufacture of mining machinery and parts. The structures will aggregate 60 x 280 ft., and are estimated to cost about $100,000 with machinery.

The Reliable Enameling & Plating Co., 2221 South Main Street, Los Angeles, has filed notice of organization to manufacture enameled and plated metal products. B. H. Brown, 5307 South Main Street, heads the company.

Loading and unloading machinery, hoisting equipment, etc., will be installed on the new dock to be constructed by the Board of City Commissioners, Oakland, Cal., at the foot of Clay Street, estimated to cost about $100,000. City Commissioner Albert E. Carter is in charge.

The Great Western Power Co., 14 Sansom Street, San Francisco, has arranged for a bond issue of $500,000, the proceeds to be used for extensions and improvements to plants and system.

The California Metal Products Co., 8613 Moneta Avenue, Los Angeles, has filed a notice of organization to manufacture metal goods. Thomas D. McHale, 634 West Ninety-second Street, heads the company.

The San Joaquin Light & Power Corporation, Fresno, Cal., has plans under way for the erection of a one-story works building, 130 x 150 ft., to cost $25,000.

The Pomona Sheet Metal Works, Pomona, Cal., has removed to a new building at 174 North Gordon Street, where increased facilities will be provided for the manufacture of gas furnaces, ventilating equipment, etc.

The Crystal Ice & Cold Storage Co., Sacramento, Cal., has plans under way for the erection of a new three-story cold storage plant at Sixteenth and R streets, estimated to cost about $100,000 with machinery. Rasmus Carstensen is president.

Canada

TORONTO, Aug. 22.

The Canadian Automobile Corporation has taken over the building formerly occupied by the Rapid Tool & Machine Co., at Lachine, Que., and has commenced the manufacture of motor cars. The present plant is only temporary, the company having secured a site of 163,000 sq. ft. at Longueuil, Que., and proposes to start work in the near future on the erection of a plant. The directors include F. W. Stewart, H. W. Austin, J. D. Henderson and others.

The International Harvester Works, Chatham, Ont., will build an addition to its plant and proposes to go into the manufacture of motor trucks, etc.

The Hollinger Consolidated Mines, Ltd., Timmins, Ont., proposes to spend $2,000,000 on hydroelectric development there. Sutcliffe & Neelands, New Liskeard, Ont., are the engineers.

The East Kootenay Lumber Co., Jaffray, B. C., is having plans prepared for repairs to a planing mill to cost $40,000. Some new equipment will be required.

The contract for foundations for the paper mill to cost $2,000,000 for the Provincial Paper Mills, Ltd., 54 University Avenue, Toronto, to be erected at Port Arthur, Ont., has been awarded to Chambers, McQuigge & McCaffrey, Port Arthur, Ont.

The Smithville Metals, Ltd., Smithville, Ont., will erect a new factory to cost $11,000. The steel contract has been let to the Standard Steel Construction Co., Welland, Ont.

The Wire Co. of Canada, Ltd., Hamilton, Ont., recently incorporated to manufacture wire and stamping specialties, has taken over the plant and equipment of the MacPherson Wire Co., Ltd., Hamilton.

The Canadian Austin Machinery, Ltd., Woodstock, Ont., has been incorporated with a capital stock of $50,000 by Henry A. Little, Arthur S. Robertson, Stanley A. Ross and others to manufacture concrete mixing machines, steam shovels, contractors' equipment, etc.

The British American Fuel & Metals, Ltd., Toronto, has been incorporated with a capital stock of $50,000 by Thomas Gibson, 67 Yonge Street; Henry C. Draper, 100 Binscarth Road; Edward M. Stoer and others to manufacture iron and steel products, etc.

The National Slag Products, Ltd., Hamilton, Ont., recently incorporated with a capital stock of $300,000 will start work in the near future on the erection of a plant for the production of tile, brick, roofing material, posts, etc. The officers and directors are William H. Yates, Hamilton, president; David Dick, Welland, vice-president; J. P. Anglin, Montreal; Hon. G. D. Robertson, Ottawa, Ont.; H. J. Daly and W. R. Fleming, Toronto; Gordon Hutton and E. J. Robertson, Hamilton.

IRON AND INDUSTRIAL STOCKS

Constructive Forces Have Failed to Stimulate Investment Buying

Steel mill operations are improving and there has been greater activity in the pig iron market and in various manufacturing lines. National finances, as represented in Federal Reserve and private bank reports, are daily strengthening. These constructive forces have failed to stimulate investment buying of iron and industrial stocks to a point in excess of liquidating sales. Average quotations for securities consequently are lower than they were a week ago and in quite a few instances lower than they have been before this year.

Six months' earnings statements, issued recently by important industrial concerns, almost uniformly revealed the necessity of absorbing inventory losses, thus postponing the time when normal earnings power will have been restored. Fear that forthcoming earnings statements will show such internal conditions is said to be the basis for at least a part of the present liquidation in securities.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

Allis-Chalm. com.	29½ - 30⅝	Midvale Steel.....	23¼ - 24
Allis-Chalm. pf...	72¾ - 73	Nat.-Acme	14 - 14⅛
Am. Can com.....	24¼ - 25½	Nat. E. & S. com.	39 - 43¾
Am. Can. pf.....	78½ - 80	Nat. E. & S. pf...	— - 89½
Am. C. & F. com.	120½ - 123½	N. Y. Air Brake..	47½ - 53
Am. C. & F. pf...	— - 109½	Nova Scotia Steel.	— - 22½
Am. Loco. com....	83 - 84	Press. Steel com..	53⅝ - 57
Am. Radiator com.	— - 68½	Ry. Stl. Spg. com.	69 - 74½
Am. Steel F. com.	22½ - 25½	Ry. Stl. Spg. pf...	— - 100
Am. Steel F. pf...	— - 80½	Replogle Steel.....	— - 20
Bald. Loco. com..	71⅜ - 75	Republic, com.....	45 - 46¾
Beth. Steel com..	— - 45⅝	Republic pf.....	82½ - 84
Beth. Stl., Cl. B..	47¾ - 49	Sloss com.....	— - 33½
Beth. Stl., 8% pf..	97 - 97¼	Un. Alloy Steel...	— - 23
Chic. Pneu. Tool..	— - 48	U. S. Pipe com...	12 - 12½
Colorado Fuel.....	22½ - 23¼	U. S. Pipe pf.....	40 - 42
Cruc. Steel com...	51⅛ - 54¼	U. S. Steel com...	73⅜ - 74¾
General Electric..	109⅞ - 114½	U. S. Steel pf.....	109 - 110
Gt. No. Ore Cert..	— - 28⅝	Vanadium Steel...	26¼ - 27½
Gulf States Steel.	— - 31	Va. I. C. & Coke..	59 - 62
Int. Har. com.....	69½ - 73	Westingh'se Elec.	39½ - 43⅛
Lackawanna Steel.	37½ - 38		

Industrial Finance

All outstanding 5 per cent first mortgage bonds dated Oct. 1, 1914, of the Quigley Furnace & Foundry Co., Brightwood, Mass., due in 1924, have been called for payment Oct. 1 at the office of the State Street Trust Co., Boston. This company was taken over by the Huron Metals Co. some time ago, and eventually the plant was run by the General Electric Co. and other interests.

Frank E. Malone, New York, and Thomas B. Coughlin, Springdale, R. I., have been appointed receivers for the British-American Mfg. Co., Springdale, R. I., to succeed three original receivers, Edward J. Maurer, Frederick Stern and Louis C. Hasell.

The General Motors Corporation, in the six months ended June 30, last, showed a surplus after all charges, federal taxes, preferred stock and debenture dividends of $6,468,550, which is equal to 31c. a share on the 20,528,790 outstanding common shares of no par value. In the corresponding period last year the company earned $1.66 a share on 19,518,895 shares of common stock.

Peter Gray & Sons, Inc., Cambridge, Mass., maker of railroad lanterns, etc., has increased its capitalization $30,000 or 300 shares of preferred stock and making the total capitalization $140,000. George M. Gray is president, and Mason H. Gray, treasurer.

The Nelson Rivet Co., Taunton, Mass., has increased its capitalization from $10,000 to $25,000 by an issue of 50 shares of common and 100 shares of preferred stock issued against real estate, merchandise and machinery. A. E. Nelson is president and Walter H. Nelson, treasurer.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Metal Markets."

Iron and Soft Steel Bars and Shapes

	Per Lb.
Bars:	
Refined bars, base price	2.78c.
Swedish bars, base price	12.00c.
Soft steel bars, base price	2.78c.
Hoops, base price	3.88c.
Bands, base price	3.43c.
Beams and channels, angles and tees 3 in. x ¼ in. and larger, base	2.88c.
Channels, angles and tees under 3 in. x ¼ in., base	2.78c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	2.75c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	2.95c.
Toe calk, ½ x ⅜ in. and larger	3.45c.
Cold-rolled strip, soft and quarter hard	10.00c. to 10.50c.
Open-hearth spring steel	4.25c. to 8.00c.
Shafting and Screw Stock:	
Rounds	4.38c.* to 4.53c.
Squares, flats and hex	4.98c. to 5.03c.
Standard cast steel, base price	14.00c.
Extra cast steel	17.00c.
Special cast steel	22.00c.

Tank Plates—Steel

¼ in. and heavier	2.88c.

Sheets

Blue Annealed	Per Lb.
No. 10	3.53c.
No. 12	3.58c.
No. 14	3.63c.
No. 16	3.73c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.05c. to 4.30c.	.....
Nos. 22 and 24	4.10c. to 4.35c.	4.70c.
No. 26	4.15c. to 4.40c.	4.75c.
No. 28	4.25c. to 4.50c.	4.85c.
No. 30	4.50c. to 4.75c.	.....

No. 28, 36 in. wide, 10c. higher.

Galvanized	Per Lb.
No. 14	4.10c. to 4.35c.
No. 16	4.25c. to 4.50c.
Nos. 18 and 20	4.40c. to 4.65c.
Nos. 22 and 24	4.55c. to 4.80c.
No. 26	4.70c. to 4.95c.
No. 27	4.85c. to 5.10c.
No. 28	5.00c. to 5.25c.
No. 30	5.50c. to 5.75c.

No. 28, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Blk.	Galv.	*Wrought Iron*	Blk.	Galv.
½ in. Butt..	—48	—32	¾ in. Butt....	—22	—4
¾ in. Butt..	—54	—39	1-1½ in. Butt.	—24	—6
1-3 in. Butt..	—56	—42	2 in. Lap.....	—14	—1
3½-6 in. Lap.	—51	—37	2½-6 in. Lap.	—22	—6
7-12 in. Lap..	—43	—27	7-12 in. Lap...	— 7	+4

Steel Wire

Based Price* on No. 9 Gage and Coarser	Per Lb.
Bright basic	4.00c. to 4.25c.
Annealed soft	4.00c. to 4.25c.
Galvanized annealed	4.75c. to 5.00c.
Coppered basic	4.50c. to 4.75c.
Tinned soft Bessemer	6.00c. to 6.25c.

*Regular extras for lighter gages

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	15¾c. to 18¾c.
High brass wire	16¾c. to 21¼c.
Brass rod	13¾c. to 20¼c.
Brass tube, brazed	27 c. to 31 c.
Brass tube, seamless	18½c. to 20 c.
Copper tube, seamless	20 c. to 22¼c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 20c. to 23c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14x20		
			Primes	Wasters
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	80 lb.	$6.80	$6.55
		90 lb.	6.90	6.65
		100 lb.	7.00	6.75
IC.. $10.60	$9.50	IC...	7.20	6.95
IX.. 11.80	10.75	IX...	8.10	7.85
IXX.. 13.60	12.25	IXX...	9.10	8.85
IXXX.. 15.60	14.25	IXXX...	10.50	10.25
IXXXX.. 17.20	16.00	IXXXX...	11.50	11.25

Terne Plates

8-lb. Coating 14 x 20

100 lb.	$7.50
IC	7.75
IX	8.00
Fire door stock	11.00

Tin

Straits pig	30c.
Bar	37c. to 38c.

Copper

Lake ingot	15c.
Electrolytic	15c.
Casting	15c.

Spelter and Sheet Zinc

Western spelter	6¼c. to 6½c.
Sheet zinc, No. 9 base, casks	11½c. open 12c.

Lead and Solder*

American pig lead	5½c.
Bar lead	6¼c. to 6¾c.
Solder, ½ and ½ guaranteed	20¼c.
No. 1 solder	18½c.
Refined solder	15¾c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	80c.
Commercial grade, per lb.	40c.
Grade D, per lb.	35c.

Antimony

Asiatic	6½c. to 7c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	30c. to 32c.

Old Metals

The market has settled back into a quiet, sluggish condition. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	9.50
Copper, heavy and wire	8.75
Copper, light and bottoms	7.50
Brass, heavy	4.50
Brass, light	3.75
Heavy machine composition	7.50
No. 1 yellow brass turnings	4.00
No. 1 red brass or composition turnings	6.25
Lead, heavy	3.50
Lead, tea	2.00
Zinc	2.50